Spring 2013

Historic Waterfront Restoration, Sustainability, and Urban Form: A "Greener" Master Plan For Pier 70 At The San Francisco Waterfront

Sonia Melani Miller
San Jose State University

Historic Waterfront Restoration, Sustainability, and Urban Form

A Greener Master Plan For **Pier 70**

At The San Francisco Waterfront

by Sonia Melani Miller

Spring 2013

HISTORIC WATERFRONT RESTORATION, SUSTAINABILITY AND URBAN FORM: A "GREENER" MASTER PLAN FOR PIER 70 AT THE SAN FRANCISCO WATERFRONT

A Planning Report
Presented to
The Faculty of the Department of
Urban and Regional Planning

San Jose State University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Urban Planning

By

Sonia Melani Miller

May 2013

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CHAPTER 1: INTRODUCTION

This study explores the use of green areas as a method for integrating urban space and its applicability to *waterfront reclamation,* a specialized discipline focusing on the rehabilitation of industrial areas of ports. It also explores the philosophy of resource conservation and the integrative design solutions increasingly employed worldwide in projects of waterfront reclamation.

In San Francisco, where the study takes place, a good example of sustainable approach to waterfront reclamation is given by the direction the City has taken in planning its Port. The City of San Francisco has developed a cutting edge master plan for an unused area of the historic port (Pier 70) that, combined with the several programs in place for city greening, could become a design model for waterfront revitalization. However, the plan, mainly due to its sectoral and localized applicability, does not address how this new development will affect the urban communities living nearby. The effect of the increase in activities generated by the new development on existing residential communities is, therefore, an issue this study is set to discern and to solve with a hypothetical design.

What would be, then, the conceptual design behind a sequence of public spaces/greenways for Pier 70 to achieve the following objectives?

1. Create a physical connection between Pier 70, the existing waterfront, and nearby residential areas.
2. Promote environmental sustainability.
3. Promote social sustainability by facilitating interpersonal connections among residents, preventing the disruption of existing social and commercial activities, and limiting gentrification.

This study will also test the applicability of theories of urban design to find ways to connect the planned development to its surroundings by deploying existing programs for city greening that the City of San Francisco currently has in place.

The study follows the logic exemplified by two theories of city image and identity: Kevin Lynch's theory of the "legible image"[1] of urban form and its methodology for site planning, and Walter Benjamin's "dialectical image"[2] of cities. Lynch's theory is particularly significant to this study because it allows differentiating the "pluralistic urban society,"[3] consisting of the several social and cultural groups that share the "urban space"[4] in this area. And his methodology provides the driving logic for determining the physical and social boundaries of the geographic area surrounding Pier 70. Walter Benjamin's theory, on the other hand, offers a way to look at the dialectic and the porosity of the "blocks," to find interstitial areas to be re-used. The study employs field investigations to discern users' characteristics, and to determine conditions such as social control and exclusion affecting local urban societies.

The remaining chapters of this report are organized as follows. The next chapter introduces the potentials and constraints of waterfront reclamation, the theoretical approach, and the methodology used for the research. The third chapter is an analysis of the site following Lynch's methodology to determine the physical boundaries (edges), social and cultural hubs, and to provide an overview of the area's environmental issues, and of the historic and planning contexts. The fourth chapter exemplifies the field research and interpretation of the results. The fifth chapter contains a review of the literature on benefits of green/public places, users' behavior, and social interaction in public areas. The sixth chapter contains the evaluation of the findings from the literature review and field research, and the formulation of a conceptual design to solve issues of connectivity and social integration.

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[1] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[2] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[3] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 43-65.

[4] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 43-65.

CHAPTER 2: WATERFRONT REDEVELOPMENT: AN OPPORTUNITY FOR PLACE-MAKING

Ports are usually located in marginal areas of cities where commerce and industry traditionally flourished, and are often characterized by the environmental degradation associated with industrial processes. The deindustrialization of western economies, gradually occurring throughout the 20th century, has made this matter worse for ports in many cities, leaving entire areas of waterfront unused. Unlike ports in European cities, where development is compact and mixed land uses of commercial, residential, and sometimes industrial nature are typically allowed, the urban fabric around industrial areas of the waterfront in American cities is often fragmented by the categorization of land uses and by the presence of transportation infrastructures.

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2.

Figure 1: Port of Long Beach Middle Harbor Container Terminal
Port of Long Beach Middle Harbor Container Terminal, in Moffatt & Nichol, *Featured Projects: Port of Long Beach Middle Harbor Container Terminal*, Moffatt & Nichol, moffattnichol.com (accessed April 8, 2013).

Figure 2: Traditional European Port: Port of Naples, Italy
Port of Naples-Italy in Port Authority of Naples, *Home*, Port Authority of Naples, www.porto.napoli.it (accessed April 8, 2013).

The San Francisco waterfront, as many other Ports in the United States, is characterized by this conceptual (land use system) and physical (elements in the landscape cutting through the urban fabric) separation of space. Heavily industrialized through the 20th century and embodying the function of major cargo operations through the 1950s, the port was separated from the main city by the construction of the elevated freeway in 1957 and by a zoning ordinance prohibiting non-maritime uses.[5] And, it was not until the late 1980s that, with the availability of federal funds and the removal of restrictions on land uses, the main waterfront was modernized and reconnected to

[5] Anne Cook, Richard Marshall, and Alden Raine, "Port and City Relations: San Francisco and Boston," in *Waterfronts in Post Industrial Cities*, ed. Richard Marshall (London and New York: Spoon Press, 2001), 120-131.

the city fabric.[6] Most of the San Francisco waterfront has been revitalized since then with the exception of its southern part, which counts some areas currently being planned for redevelopment.

Pier 70, located at Potrero Point, a small cape south of Mission Bay on the eastern edge of the city, is one of the areas for which a master plan for reclamation is in place. This is an area that, because of its detachment from the main city and its access to deep water, attracted early industrial operations and that still to this day houses several types of industries.[7] The area of Pier 70 is also surrounded by several residential communities, including the *Dog Patch,* currently inhabited by a population of artists and professionals; the *Potrero Hill neighborhood,* a family oriented middle class neighborhood; and the northeastern part of the *Bayview-Hunters Point* district, an ethnically diverse and predominantly low income residential area.

2.1 Preferred Master Plan for the Revitalization of Pier 70

The *Preferred Master Plan* in place for the restoration of Pier 70 has the objective of reintegrating the sixty-seven acre site of the former Port into the surrounding city fabric.[8] The plan proposes the introduction of commercial and residential uses to the traditional maritime industry and contemplates the reuse of its early industrial buildings, introduction of "infill architecture," and the development of a system of open and public spaces.[9] And, as the mission statement of the plan promises, it will "create a vibrant and authentic historic district that re-establishes the historic activity level, activates new waterfront open spaces, creates a center for innovative industries, and integrates ongoing ship repair operations."[10]

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[6] Anne Cook, Richard Marshall and Alden Raine, "Port and City Relations: San Francisco and Boston," in *Waterfronts in Post Industrial Cities*, ed. Richard Marshall (London and New York: Spoon Press, 2001), 131.

[7] Anne Cook, Richard Marshall and Alden Raine, "Port and City Relations: San Francisco and Boston," in *Waterfronts in Post Industrial Cities*, ed. Richard Marshall (London and New York: Spoon Press, 2001), 119.

[8] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 1.

[9] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 1.

[10] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 1.

2.2 Types of Green Public Areas and Their Function

The attempt to connect sections of cities with vegetated areas is not a new idea, but it is rather rooted in history. The practice of using green areas to confer an identity and improve the environmental and social qualities of urban centers started in the late 19th century with the "parks and playground movement," when parks were introduced to city planning to mitigate the adverse environmental conditions of early industrial cities.[11] The restorative properties of green urban areas were since then recognized, including their ability to restore some environmental conditions, provide positive physiological benefits to humans, and facilitate social interaction and good citizenry. This widespread assumption over the environmental benefits derived from vegetated spaces and their role in increasing the livability, health, and social life of residential communities, has sometimes led to the categorization and use of each type of green area for specific purposes.[12] Therefore, green urban areas in the form of parks, *parklets*, community gardens, green roofs, living walls, and urban forests have specific holistic functions associated to each type. Natural parks can provide residents with areas for recreation, community gardens can mediate interpersonal relations, and urban forests can help improve the natural environment.

The Conversion of Vacant Land into Natural Parks, Pocket Parks, and Urban Forest

Derelict land can be converted into urban forests, playgrounds, community gardens, green islands, vest pocket parks, and neighborhood natural parks.[13] Many studies have been conducted to understand the processes and benefits associated with small scale urban parks in relation to the well-being of urban communities. Ferris, Norman and Sempik's study, for example, looked at different types of green urban spaces in the Bay Area and found that these could potentially

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[11] Daniel L. Thomas, "A Trail Across Time: American Environmental Planning from City Beautiful to Sustainability," *Journal of the American Planning Association* 75, no. 2 (2009): 178-192.

[12] Anna Chiesura, "The Role of Urban Parks for the Sustainable City," *Landscape and Urban Planning* 68, no. 15 (May 2004): 131.

[13] H. V. Satich, "A Strategy for Neighborhood Decline and Re-growth: Forging the French Connection," *Urban Affairs Review* 47, no. 6 (2011): 802-805.

resolve issues of health and education, and promote community development.[14] Examples of gardens and parks created from reclaimed urban land are available internationally, and in California can be found in the urban wild refuges of Strawberry Creek Garden, and in the Guadalupe River Park in San Jose.[15]

Use of Environmental Art to Restore Environmental Equilibrium and Biodiversity

Art installations adopting a combination of strategies founded in environmental design and biotechnology can be created both to restore an area's biological equilibrium and to educate the public on environmental processes and issues of climate change. Environmental Art is in itself an artistic movement dedicated to the advocacy of environmental stewardship, sometimes positively influencing changes to environmental policies. Bio-sculptures that remediate pollution and sites designed to mimic local microenvironments are, therefore, forms of artistic installations engaging eco-environmental artists in actual projects of restoration and reclamation of polluted and damaged wastelands.[16] This type of installations, often associated to the work of agronomists, biologists, and engineers, exemplifies the utilitarian value of environmental art; which examples are provided by the "hyperaccumulator to remove heavy metals from contaminated land"[17] by Mel Chin, and by the biogeochemical filter that purifies polluted water by Jackie Brookner.[18]

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[14] John Ferris, Carol Norman, and Joe Sempik, "People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development," *Social Policy and Administration* 35, no. 5 (December, 2001): 559-568.

[15] John Ferris, Carol Norman, and Joe Sempik, "People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development," *Social Policy and Administration* 35, no. 5 (December, 2001): 566.

[16] Amy Lipton and Tricia Watts, "Signs to Sculptural Places, Ecoart: Ecological Art," in *Ecological Aesthetics-Art in Environmental Design: Theory and Practice*, Ed. Heike Strewlow. 1-6 (Basel, Berlin ,Boston: Birkhauser Publishers), 241-255.

[17] Amy Lipton and Tricia Watts, "Signs to Sculptural Places, Ecoart: Ecological Art," in *Ecological Aesthetics-Art in Environmental Design: Theory and Practice*, Ed. Heike Strewlow. 1-6 (Basel, Berlin ,Boston: Birkhauser Publishers), 241-255.

[18] Amy Lipton and Tricia Watts, "Signs to Sculptural Places, Ecoart: Ecological Art," in *Ecological Aesthetics-Art in Environmental Design: Theory and Practice*, Ed. Heike Strewlow. 1-6 (Basel, Berlin ,Boston: Birkhauser Publishers), 241-255.

The Use of Parklets to Solve Space Constraints

Movable green areas in the form of public patios and gardens, also known as *Parklets*, are becoming a common asset in San Francisco to solve problems of space constraints. These semi-permanent installations, typically occupying about two metered-parking spaces, are also increasingly becoming permitted permanent improvements to the public right of way.[19]

Community Gardens to Facilitate the Formation of Social Capital

Certain types of green urban areas are known to have socially integrating functions by providing sites where people can meet and socialize, build relationships, and bond with each other. They can contribute to the reduction of urban blights by increasing individual self worth, which decreases the attitudinal process leading to "violent crime, and to binge drinking and depression."[20] Community gardens are the green urban areas known to best serve this purpose, sometimes also associated with the treatment of specific health and attitudinal issues.

Community gardens became popular in the early 20th century as a response to the food shortages of the World Wars.[21] Grassroots movements later used community gardens to react to the deteriorated condition of some cities by making them into a new use for empty urban lots.[22] The American Community Gardening Association (ACGA)[23] defines community gardens as:

> Any piece of land gardened by a group of people in urban, suburban or rural settings. The form of the garden may vary from one large communal lot to many individual plots, and can be located in a variety of settings such as schools, churches, neighborhoods, and hospitals. Community gardens

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[19] Nate Berg, "From Parking to Parklets," *Planning Journal* 76, no. 3 (July 2010): 5.

[20] Joshua W. R. Baur and Joanne Tynon, "Small-Scale Urban Nature Parks: Why Should We Care?" *Leisure Sciences* 32, no. 2 (2010): 198.

[21] Joan Twiss, Joy Dickinson, Shirley Duma, and Tania Kleinman, "Community Gardens: Lesson Learned from California Healthy Cities and Communities," *American Journal of Public Health* 93, no. 9 (September 2003): 1435.

[22] Efrat Eizenberg, "The Changing Meaning of Community Space: Two Models of NGO Management of Community Gardens in New York City," *International Journal of Urban and Regional Research* 36, no 1 (January 2012): 108; Michelle P. Corrigan, "Growing What You Eat: Developing Community Gardens in Baltimore, Maryland," *Applied Geography* 31, no. 4 (2011): 1234.

[23] Ellen Teigh, Joy Amulya, Lisa Bardwell, Michael Buchenau, Julie A. Marshall, and Jill S. Litt, "Collective Efficacy in Denver, Colorado: Strengthening Neighborhoods and Health through Community Gardens," *Health and Place* 15, no. 4 (2009):1116-1119.

> can also include a series of plots dedicated to urban agriculture where the produce is sold at local farmer's market.[24]

The study conducted by Ferris, Norman and Sempik classifies the different types of gardens according to their holistic functions in *leisure gardens, child and school gardens, entrepreneurial gardens, crime diversion gardens, work and training gardens, healing and therapy gardens, and quiet gardens*.[25]

2.3 Theoretical Approach to the Study

In this study, two theories on the idealization of the urban image are compared to test potential "operable models" to analyze and redesign urban environments. These theories consist of Kevin Lynch's theory of the "legible image"[26]of urban form and Walter Benjamin's "dialectical image"[27]of cities. The comparison of these two theories has previously inspired empirical studies to explore their applicability in the deployment of an "operable model" for city urban analysis in opposition to a fixed "imagistic model."[28]

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[24] Ellen Teigh, Joy Amulya, Lisa Bardwell, Michael Buchenau, Julie A. Marshall, and Jill S. Litt, "Collective Efficacy in Denver, Colorado: Strengthening Neighborhoods and Health through Community Gardens," *Health and Place* 15, no. 4 (2009):1116-1119.

[25] John Ferris, Carol Norman, and Joe Sempik, "People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development," *Social Policy and Administration* 35, no. 5 (December, 2001): 559-568.

[26] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010)2-8.

[27] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[28] In the "imagistic model design is informed by a well defined definition of place;… [in the operable model] design takes an exploratory approach of excavating and interpreting the structure of the city and reconstructing its integral parts for the future." In: Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 3.

Kevin Lynch's theory on the "clarity of the urban form"[29] was influential in the production of the 1971 Urban Design Plan of San Francisco, based on shaping "the city future image on the legibility of its exterior form in relation to its natural settings."[30] Lynch's theory of the legible image, therefore, articulates the visual qualities of cities through the elements constituent of their physical form (visual form). It views the city as an intrinsic construct of what he calls its "environmental image,"[31] and provides a model for the analysis and planning of city structures by presenting an image of what the city is, and a prescriptive model of what it should look like."[32] In the book *The Image of the City* he proposes a theory for understanding the visual qualities of cities by grasping the structure and identity of the urban image. This image presents itself as a cognitive map comprised of a set of elements which he categorized in "districts," consisting of relatively large sections distinguished by identity and character; "edges," consisting of physical boundaries that cannot be crossed; "nodes," consisting of focal points, such as intersections and plazas; and "landmarks," consisting of objects that serve as a reference to navigate the landscape.[33]

The suitability of Lynch's model to this particular study is given by its engagement with perceptual psychology, environmental anthropology, animal behavior, and in the acknowledgement of the fact that urban space is often shared by a pluralistic society.[34] Lynch's "normative" theory is therefore "based on the assumption of general psychological needs for

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[29] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[30] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[31] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2.

[32] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2.

[33] Kevin Lynch, *The Image of the City* (Cambridge, Massachusetts: The MIT Press, 1960), 1-181.

[34] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 43-65.

coherence, and visual order,"[35] and is expressed by the needs of the mind to "reconcile scenes from highly generalized visual forms"[36] (the creation of a "shared mental image of the city").[37] Lynch's idea of a "shared mental image of the city,"[38] however, is not just based on the identification of space and navigation, but is also a "fundamental quality of the urban aesthetic,"[39] entailing feelings of "security… [and] of intellectual and emotional coherence."[40] He, therefore, connected "orientation with warmth and familiarity…[implying] a relationship of rootedness and intimacy between the city and its inhabitants."[41]

Walter Benjamin's theory is based on "overlooked marginal urban spaces,"[42] and was often used for the interpretation of interstitial spaces in San Francisco.[43] Using the directions set by the work of other urban theorists, such as Aldo Rossi, Benjamin studied the "limital and marginal conditions" and "morphography" of individual slots of urban space by using a reading of the city examining "its unknown hidden places to construct a narrative of social life."[44] Social life is

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[35] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 44.

[36] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 45.

[37] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 43-65.

[38] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 45.

[39] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 52.

[40] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 52.

[41] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 52.

[42] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[43] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2-8.

[44] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2.

therefore, according to Benjamin, the "key to understanding the physical structure of the city itself,"[45] providing a method for analysis and interpretation of potentialities of the urban setting.[46] Benjamin uses the concept of porosity as a visual tool to illustrate this vision of the city. Providing us with a key for the interpretation of the urban settings that, by blurring all distinctions between public and private, reveals what is hidden and concealed within a city' fabric.[47]

2.4 Research Method for the Study

The research method designed for this study consists of the combination of literature review, planning documents review, and field research. An analysis of peer reviewed literature was used to establish the conceptual background on the utility of green urban areas by assessing studies of the benefits these have for humans and the environment.

A review of maps of the area of the Central Waterfront and initial informal site visits allowed the identification of the project boundaries and of the "core areas" to use as locations for the field study. And the review of planning documents, such as the city's area plans, environmental reports, soil surveys, design guidelines, and historic statements, helped establish a historic, geographic, environmental, and societal background for the areas surrounding Pier 70.

The field research included two studies following Zeisel's methodology for field investigation: the observation of physical traces and the observation of user behavior. The purpose of the observation of physical traces was to identify the actual use of the several areas, the adaptations users made to the physical environment, and the degree of control they exercised over the landscape. The observation of user behavior had the purpose of determining the demographic of users, the volume of traffic of visitors, the most common recreation activities, the movement of users through space, and the degree of social interaction happening in each area.

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[45] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 2.

[46] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 8.

[47] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 7.

CHAPTER 3: CREATING A MENTAL MAP OF THE AREA, SITE ANALYSIS AND SITE PLANNING

The aim of this section is to identify elements in the urban environment that are universally understood (making up the shared image of the city), and to determine the factors, both physical and social, setting areas apart from each other. For this purpose, the site analysis follows Lynch's model for site planning, taking into consideration both the physical structure of the site and its social component and uses (organism and environment).[48] The analysis starts with what Lynch defines as "the organization of the external physical environment,"[49] consisting of the physical form of the land and the characteristics of the terrain above and below the surface.[50] The analysis includes the positions of objects, the location of activities, the existing uses, the land's topography, the "subsurface factors,"[51] and the climate.[52] It discerns in this way the physical elements (edges and nodes), as well as the conditions of continuity that delineate the areas described by Lynch as "districts."

The analysis follows with the site's social component determined by its current uses and users, the historic uses, the planning system, the demographic components, and other elements that define individual cultural hubs.[53]

3.1 The External Physical Environment: Geographic and Environmental Characteristics

This section discerns "the organization of the external physical environment"[54] of the site, consisting of the physical form of the land and the characteristics of the terrain, including

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[48] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 3.

[49] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 8.

[50] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 8.

[51] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 36.

[52] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 20.

[53] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 8.

[54] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 8.

elevations, subsurface characteristics, the position of objects (buildings etc.), the environmental conditions, and the climate.[55]

3.1.1 The Area's Physical Boundaries

The planned area of Pier 70 is located in the eastern part of the city and county of San Francisco, located in the geographic region of the Bay Area. It is adjoined by the Dogpatch and Potrero Hill neighborhoods, and by the northern edge of the Bayview-Hunters Point district.

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Location Map: Not to Scale

Figure 3: Map of the Area

Figure 4: San Francisco Location Map
Source: San Francisco Planning Department, *Building Footprints Map*, San Francisco: San Francisco Planning Department, www.sf-planning.org (accessed March 8, 2013).

Note: Public transit serving this area is provided by San Francisco's BART (Bay Area Rapid Transit), San Francisco Muni light rail services (SF Muni SFMTA), and SFMTA bus routes. A Caltrain station is also located at 22nd Street, providing a connection to the southern and northern areas of the region. The US I-280 freeway crosses and marks the edge between the Dogpatch neighborhood and upper Potrero Hill, and US 101 goes between Potrero Hill and the Mission District.

The topography varies greatly throughout the area, and the predominantly flat terrain of the Potrero Hill lower residential neighborhoods progressively increases in elevation to the west.[56]

[55] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 20.

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Figure 5: Aerial View of San Francisco
Aerial View of San Francisco in Freelargephotos.com, http://freelargephotos.com/001142_l.jpg (accessed March 8, 2013).

Figure 6: Connecticut Street –Potrero Hill

The topography is fundamental for determining the relationship between the area of revitalization of Pier 70 and the surrounding neighborhoods, since changes in elevation affect the way we perceive the urban environment. Therefore, clear boundaries in terms of walkabilty and accessibility are created by the elevation gradually increasing from two feet below sea level at the waterfront up to 600 feet above sea level in the terraced hills of Potrero.[57] And separation is particularly felt where the slope is steeper, such as in areas of cut and fill and by the corridors of the freeways.[58]

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[56] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 4-6.

[57] United States Department of Agriculture, Natural Resources Conservation Service, "Web Soil Survey: Soil Map," http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (accessed November 20, 2012); United States Department of Agriculture: Soil Conservation Service, *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California* (San Francisco: USDA: Soil Conservation Service, 1991), 67-68.

[58] United States Department of Agriculture, Natural Resources Conservation Service, "Web Soil Survey: Soil Map," http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx (accessed November 20, 2012); United States Department of Agriculture: Soil Conservation Service, *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California* (San Francisco: USDA: Soil Conservation Service, 1991), 67-68.

Freeways, railway tracks and large, busy roads also delineate space, and create edges as well as connections. Highways 280 and 101, for example, act as major separators for the two neighborhoods of the Dogpatch and Potrero Hill, while the several ramps and pedestrian bridges act as connectors.

Figure 7: Building Footprints Map

Edges and boundaries are also created by sudden changes in the grain of the urban fabric. For example, an edge is created by the contrast between the "fine grain" (small building footprints) of the fabric in the residential area of the Dogpatch, and the "gross grain" (larger blocks and larger building footprints) of the industrial development along the Bay to the south and of some areas in the north (see building footprint map in figure 7). Odd orientation of development and streets ("off the grid") can also create edges and patches of isolation and exclusion, a condition found in the area of the Potrero Annex housing project at the southwestern corner of the Dogpatch.

Figure 8: Aerial View of the Potrero Annex Housing Project
Potrero Annex Housing Project in Toptravelists. Net, http://toptravellists.net/wp-content/uploads/2012/12/Aerial-View-San-Francisco-California-United-States.jpg (accessed March 8, 2013).

3.1.2 Environmental Conditions, Climate and Noise

The climatic conditions in this location are fairly similar to those of other areas of the San Francisco Peninsula, characterized by moist winters and foggy summers. The air's temperature, slightly warmer here than in the rest of the city of San Francisco, is influenced by the temperature of the seawater, by the low morning fog, and by the marine air flowing from the Pacific Ocean.[59]

[59] United States Department of Agriculture: Soil Conservation Service, *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California* (San Francisco: USDA: Soil Conservation Service, 1991), 2.

Figure 9: Panoramic View of San Francisco Peninsula
San Francisco Peninsula in Declan McCullagh Website, http://www.mccullagh.org/db9/1ds-5/san-francisco-aerial.jpg (accessed March 8, 2013).

Note: Winds are predominantly west and northwest and subject to seasonal variations. Humidity is moderate, averaging 65 to 75 percent, with higher peaks closer to the ocean. And the area receives between 15 and 20 inches of annual precipitation, mainly concentrated between November and April.

The topographic diversity, intended as the elevation changes and degree of slope, determines the type and depth of topsoil. The determination of soil type is important for issues of health and safety, affecting policies regulating development, and is fundamental for establishing actions to reintroduce vegetation and wildlife in planned open space. This area is also particularly vulnerable to ground failure in case of earthquakes, due to the seismic nature of the region and to the nature of the filled terrain of the Bay. The seismic nature of the area, together with the potential for high sea level rise, a condition currently affecting the stretch of land immediately adjacent to the Bay, is also important for the projected longevity of new development.

Environmental Contamination

The areas of Pier 70 and the Central Waterfront are characterized by the type of environmental contamination, affecting groundwater and soil, typical of urban settings exposed to industrial activities. And to health conditions connected to poor air quality and higher-than-normal environmental noises occurring in residential neighborhoods in proximity of highways.

Environmental Contamination in the Area of Pier 70

The site of Pier 70 occupies the San Francisco historic shoreline, filled in the late 1800s.[60] It is currently covered by buildings, pavement, gravel, and weedy patches of vegetation.[61] Areas of deep soil around storage tanks are particularly affected by soil and ground water contamination derived from the leakage of fuel.[62] And the ground contains heavy metals (arsenic, cadminium, copper, chromium, nickel, vadadium, and zinc) and asbestos derived from the native serpentine rock of the bedrock and of the fill.[63] Other contaminants, found in the infill material, soil, and groundwater, are attributable to the area's industrial past and present uses and to the residues of petroleum and hydrocarbons from the 1906 earthquake and fire.[64]

Air Pollutants and Environmental Noise

Freeways I-280 and 101 and some of the industrial facilities in the Central Waterfront are the main sources of air pollution and environmental noise.[65] The emission density of air pollutants in this part of the waterfront is also considerably high because of its sheltered position from high winds, preventing the dispersion of polluting particles.[66] Residential zones around primary

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[60] Treadwell and Rollo, *Environmental Site Investigation Report Executive Summary: Pier 70 Master Plan Area, San Francisco, California Project no. 4963.1* (San Francisco: San Francisco Planning Department, 2010), 1.

[61] Treadwell and Rollo, *Environmental Site Investigation Report Executive Summary: Pier 70 Master Plan Area, San Francisco, California Project no. 4963.1* (San Francisco: San Francisco Planning Department, 2010), 2.

[62] Treadwell and Rollo, *Environmental Site Investigation Report Executive Summary: Pier 70 Master Plan Area, San Francisco, California Project no. 4963.1* (San Francisco: San Francisco Planning Department, 2010), 8.

[63] Treadwell and Rollo, *Environmental Site Investigation Report Executive Summary: Pier 70 Master Plan Area, San Francisco, California Project no. 4963.1* (San Francisco: San Francisco Planning Department, 2010), 8.

[64] Treadwell and Rollo, *Environmental Site Investigation Report Executive Summary: Pier 70 Master Plan Area, San Francisco, California Project no. 4963.1* (San Francisco: San Francisco Planning Department, 2010), 1-2.

[65] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 357-358.

[66] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 9-1.

sources of emission of toxic air contaminants (factories and roadways) and places where people exercise are the areas most at risk for health problems associated to respiratory and cardiovasculatory diseases.[67]

Environmental noise, on the other hand, can cause emotional and cognitive disturbance,[68] triggering reactions such as anger, depression, and anxiety, and can also be the cause of serious health problems.[69] In the Central Waterfront, environmental noise is mostly caused by the vehicular traffic of US 101 and I-280 freeways, by local secondary roadways, and by Caltrain surface trains.[70]

3.2 "Organism and Environment"[71]

According to Lynch the way organisms (people) interact with the environment is a determinant for an area's current and future uses. This section looks at the way the social component, reflected by the site's historic and current uses, has shaped its social and physical components, consisting of its social hubs, architectural forms, and the shape of the land.

3.2.1 The Historic Context

The Central Waterfront began to form simultaneously with other areas of the city around the time of the Mexican independence from Spain in 1821.[72] This happened not long after the establishment of Mission Dolores by Juan Bautista de Anza, at the time of the secularization act

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[67] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 323-331.

[68] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 305.

[69] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 305.

[70] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 305.

[71] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 3.

[72] United States Department of Agriculture: Soil Conservation Service, *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California (*San Francisco: USDA: Soil Conservation Service, 1991), 1.

of 1834.[73] The land of the peninsula was then divided into ranchos, including Rancho Potrero Viejo, Rancho Potrero Nuevo, Rancho San Miguel, and clusters of smaller ranchos around the chapel of Mission Dolores.[74] The area initially sustained enterprises based on agricultural production and cattle grazing, until an array of commercial activities was introduced during the "gold rush, coinciding with the cession of California to the US in 1846."[75]

The gold rush, triggered by the discovery of gold veins in the foothills of the Sierra in 1848, and silver deposits in Nevada in 1859, was the event that caused the economic expansion, transforming San Francisco into a full mercantile city.[76] During this time the population increased dramatically and the city developed in a chaotic pattern, which grid and boundaries were not regularized until the Van Ness Ordinance of 1854.[77] The years that followed saw the onset of the Gilded Age, leading to the transformation of the waterfront into an industrial settlement.[78] At this time large enterprises started to move into the area, and the hills of Potrero Point were leveled to

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[73] United States Department of Agriculture: Soil Conservation Service, *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California (*San Francisco: USDA: Soil Conservation Service, 1991), 1; City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 18.

[74] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 18; United States Department of Agriculture: Soil Conservation Service, *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California* (San Francisco: USDA: Soil Conservation Service, 1991), 1.

[75] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 18.

[76] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 18.

[77] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 18.

[78] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement* (San Francisco: San Francisco Planning Department, 2001), 7.

fill the Bay estuary. The economic growth that took place during this time also caused a large flux of population growth and the redistribution of residential settlements in many parts of the city.[79]

Development of the Industrial Waterfront

During the Gilded Age, the Central Waterfront became the most important area of heavy industry in the West Coast. Initially the location for the production of black gun powder used for hard-rock mining during the gold rush, the area started to include maritime industries as early as 1867, as well as industries producing rolled steel and heavy machinery for transportation and industrial production.[80] This process of industrialization lasted until the late 20th century, deeply changing the physical landscape of the area.[81] Residential areas of the waterfront, such as Irish Hill and the Dogpatch, also developed during the early stages of industrialization to house factory workers.[82] Irish Hill was established in 1867 to house Irish male laborers, and the Dogpatch in 1870, mainly for American-born skilled labor.[83]Amenities, such as boarding houses, hotels, saloons, restaurants and grocery stores, were added to these residential settlements in a development that accompanied the growth of industrialization up to the first decade of the 20th century.[84] The industries that settled in this area included the City Gas Company (1873) that later became the San Francisco Gas Light Company Powerhouse, the Machine Shop (1899), the

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[79] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 29-37.

[80] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 8-9.

[81] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 9.

[82] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 14.

[83] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 13-14.

[84] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 9.

California Sugar Refinery (1881), the American Barrel Company (1884), and several other smaller enterprises.[85]

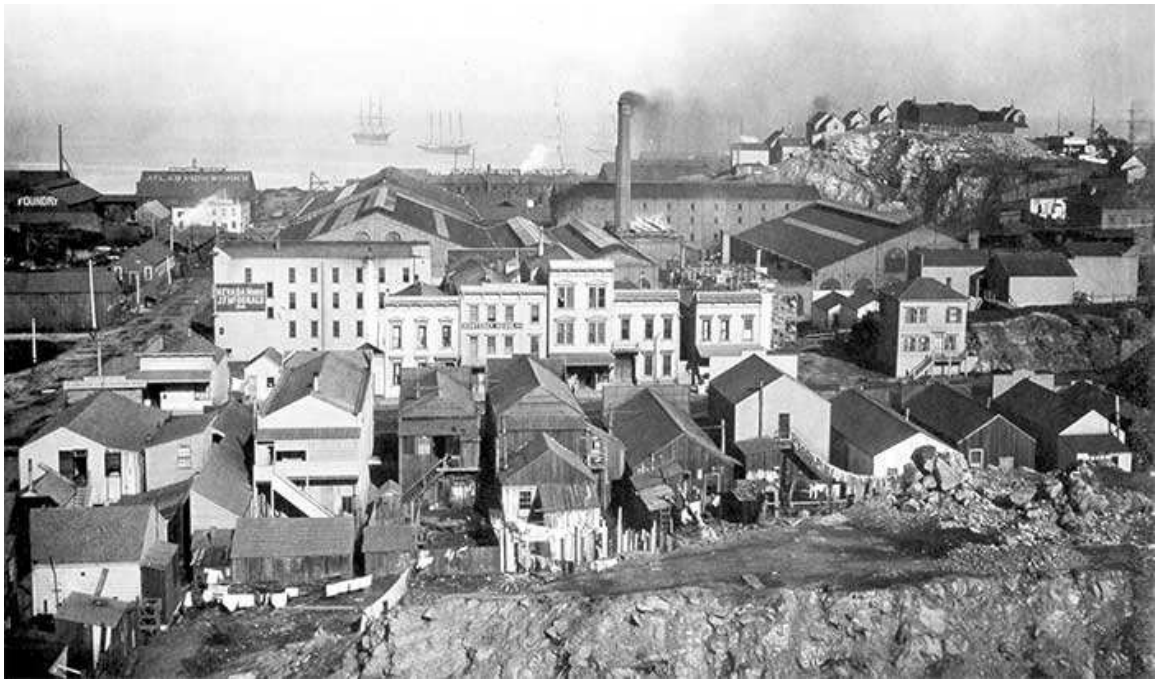

Figure 10: Historic Panorama of Former Residential Quarters at Irish Hill
Irish Hill in Pier 70 San Francisco, Pier 70 San Francisco: Historic Shipyard at Potrero Point, Pier 70 San Francisco Website, http://pier70sf.org/history/irish_hill/IrishHill1.jpg (accessed March 8, 2013).

The landscape at the waterfront drastically changed at the beginning of the 20th century with the blasting of Potrero Hill to fill the water marshes of the tideland, which also erased the residential neighborhood of Irish Hill.[86] The transportation infrastructures constructed during this time, greatly improving the accessibility of the area, consisted of the Long Bridge (1867), pedestrian bridges connecting Potrero Point to the residential area of Potrero Hill, a new street connecting Potrero Point to Islais Creek, and a tract of railroad connecting the waterfront to the main city.[87] This improved accessibility also triggered the extension of San Francisco's industrial belt to the southern area of the waterfront (Hunters Point) starting an industrial and commercial

[85] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 9.

[86] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 16.

[87] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 18-19.

development that culminated with the acquisition of Bayview-Hunters Point Dry Dock by the U.S. Navy in 1940.[88]

From the 1906 Earthquake to the Present

The 1906 earthquake destroyed many parts of the city, bringing profound changes to both its physical and social environment. During reconstruction, commercial corridors were made denser, larger, and higher, and institutional and public assembly structures were introduced together with early automobile routes.[89] The power of the labor unions also strengthened during this period, in response to the deteriorating working and living conditions of industrial workers, resulting in the establishment of a working class culture within the city political climate.[90]

In the years following reconstruction the waterfront remained vital to regional economy and trade, sustaining a considerable population increase from the flux of refugees from other parts of the city and of the country.[91] The economy of the waterfront flourished with the increased demand for maritime, naval, and submarine production that grew substantially during the years of World War I, and reached its peak at the outbreak of World War II.[92] However, the residential areas of the waterfront started to decline when many log-time residents relocated to the suburbs, as a repercussion of the easier commute provided by the new transportation infrastructures and by the increase popularity of the automobile.[93] The population of the Central Waterfront also

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[88] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 3.

[89] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 69-74.

[90] City and County of San Francisco Planning Department, *City within a City: Historic Context Statement for San Francisco's Mission District* (San Francisco: City and County of San Francisco Planning Department, 2007), 66.

[91] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 11-76.

[92] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 12.

[93] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 15.

drastically declined when industrial jobs dramatically dropped between the years of 1965 and 1980.[94]

The residential and demographic development of the southern industrial area of Bayview-Hunters Point was largely determined by African American immigrants employed in the naval shipyards during World War II.[95] The district of Bayview-Hunters Point has been since then the largest enclave of African Americans in the Bay Area, and also one of most representatives in terms of "Black" activism.[96] The African American communities of Bayview-Hunters Point also had an important role in the Civil Rights Movement of the 1960s, drawing attention to discrimination in housing, employment, education, and use of public facilities.[97]

"Black activism" in this area proliferated in the late 1960s, and culminated in the Hunters' Point riot of 1966 with the empowerment of radical groups, such as the Black Panther Party and the Nation of Islam.[98] Support groups such as "Black Men for Action" also formed during this time, and the Afro Pride Festival was held for the first time in 1967.[99]

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[94] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 16.

[95] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 3-4.

[96] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 70.

[97] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 12.

[98] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 12-118.

[99] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 118.

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Figure 11: National Guard Clearing 3rd Street, 1966.
National Guard clearing 3rd Street, 1966, in Found SF Digital Archive, http://foundsf.org/images/8/84/3rd-street-national-guard-clearing-street-sept-28-1966.jpg (accessed March 8, 2013).

Figure 12: *Bayview-Hunters Point Dry Docks, 1920s*
Bayview-Hunters Point Dry Docks,1920s, Found SF Digital Archive, http://foundsf.org/images/8/80/Bayvwhp%24hunters-point-drydocks-1920s.jpg (accessed March 8, 2013).

In the 1970s, the use and dealing of heroin became a frequent problem in some of the housing projects of Bayview-Hunters Point, as gangs like the "Sheiks," the "Savoys," and the "Magnificent Seven" started frequenting the area.[100] The social conditions in some Bayview-Hunters Point's neighborhoods further degenerated with the closure of the shipyard at Hunters Point in 1974, and the decommissioning of the Naval Base in 1991, leading to major job loss and causing even more poverty and marginalization.[101]

Current Socio-economic Situation

The demography of most areas has slightly redistributed following the increase in housing prices, affecting the city's overall real estate market. The African American population of Bayview-Hunters Point was cut to less than half as other ethnic groups moved into the area, making it into a sprawling residential and industrial district with a diverse, mixed income population.[102] Bayview-Hunters Point is still, however, afflicted to this day by poverty,

[100] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 125.

[101] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 3.

[102] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 3-126.

disinvestment, and industrial pollution.[103] And, although the fierce drug war of the 1980s and 1990s has subsided, violence, drug trafficking and gang crime seem to persist in some of the housing projects.[104] In 2010 the African American population of Bayview-Hunters Point was reduced to 32 percent of the total population, while Asians were 33 percent, and Caucasians 12 percent.[105]

The Central Waterfront, on the other hand, has experienced a renaissance with the housing stock restored and businesses reintroduced. The area has maintained a strong industrial and commercial base since the late 1990s, and the social environment has thrived also in account of the local artist communities. Caucasians were 66 percent of the total population of Potrero Hill in 2010, while Asians were 13 percent, Latinos 14 percent, and African Americans 9 percent.[106]

3.2.2 The Planning Context

The area of Pier 70 is part of the planning area of the *Central Waterfront*, under the jurisdiction of the City of San Francisco. It is managed by the San Francisco Port Authority and it governed by a public trust system that determines its land uses and the type of development allowed. This area has undergone several planning processes initiated by agencies, such as the Port of San Francisco, the City of San Francisco, and the San Francisco Bay Conservation and Development Commission. The planning process of the "Eastern Neighborhood Community Planning Program," started in 2005 by the City of San Francisco Planning Department, led to the production of an "Area Plan" for the Central Waterfront, a document with the purpose of guiding the transition of this industrial area into a residential and mixed-use neighborhood.[107]

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[103] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 3.

[104] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010), 126.

[105] San Francisco Planning Department, *San Francisco Neighborhoods Socio-Economic Profiles: 2006-2010 American Community Survey* (San Francisco: San Francisco Planning Department, 2012), 8.

[106] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 200* (San Francisco: San Francisco Planning Department, 2001), 16; San Francisco Planning Department, *San Francisco Neighborhoods Socio-Economic Profiles: 2006-2010 American Community Survey* (San Francisco: San Francisco Planning Department, 2012), 58.

[107] San Francisco Planning Department, "Eastern Neighborhoods Community Planning," San Francisco Planning Department, http://www.sf-planning.org/index.aspx?page=1673 (accessed January 23, 2013).

Other important planning documents affecting the Central Waterfront and regulating all cargo operations and Bay fill are the "San Francisco Special Area Plan" of 2000, and the "San Francisco Bay Area Seaport Plan" of 2003, by the San Francisco Bay Conservation and Development Commission. The San Francisco Bay Conservation and Development Commission also produced the "San Francisco Bay Area Water Trail Plan" in 2007, forwarding the vision for a network of sites for launching human-powered boats.

The "Waterfront Land Use Plan" is the planning document produced by the Port of San Francisco, resulting from the ballot measure Proposition H of 1990, directly regulating the land use in the area of Pier 70. The "Pier 70 Preferred Master Plan" of 2010 is, on the other hand, the document designed to specifically guide the revitalization of Pier 70.

Pier 70 Preferred Master Plan

The "Pier 70 Preferred Master Plan" is the planning document guiding the redevelopment of Pier 70, prepared through a community planning process initiated by the Port of San Francisco in 2007. The Master Plan sets objectives for the historic preservation of the area's historical resources, for the planning of new public open space, and for the establishment of connections to the surrounding areas of the waterfront.[108] It also seeks to embrace new economic opportunities by facilitating the introduction of non-maritime activities and housing, and to establish collaborations with private developers.[109] All actions and uses for the area comprised by the plan must, however, conform to the "Burton Act," a treaty based on the English common law "public trust for commerce navigation and fisheries" prohibiting the private use of all submerged lands of the Port.

The Central Waterfront Planning Area

Pier 70 is included in the Central Waterfront Planning Area of the City of San Francisco General Plan, the same planning document comprising the industrial area of Pier 80 and the

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[108] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 3.

[109] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 5.

neighborhood of the Dogpatch.[110] The Central Waterfront Area Plan forwards the vision of creating a well-designed neighborhood with walkable and welcoming streets, and a mix of economic, residential, and industrial uses. It is also supposed to guide and integrate future development with traditional uses, improve the neighborhood's connectivity, and preserve the area's historic integrity.[111]

3.3 The Site of Pier 70 and the Surrounding Communities

Physical boundaries are not the only factor setting neighborhoods apart, because collective values, social endeavors, and economic status also act as powerful dividers. The purpose of this section is to evaluate the area surrounding Pier 70, both in terms of physical boundaries given by the characteristics of the terrain and social boundaries existing among communities.

3.3.1 Pier 70

The area of Pier 70 is a 67-acre historic industrial site comprising a group of warehouses from the Victorian era and several industrial structures from other periods.

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Figure 13: View of Pier 70 Historic Core Looking West Along 20th Street

Figure 14: Union Iron Work Machine Shop Building

Many of these historic structures are located around 20th Street, the original access to the core of the complex, where many of the buildings and parcels are currently leased to a variety of

[110] San Francisco Planning Department, *Central Waterfront Area Plan: An Area Plan of the General Plan of the City and County of San Francisco* (San Francisco: San Francisco Planning Department, 2008).

[111] San Francisco Planning Department, *Central Waterfront Area Plan: An Area Plan of the General Plan of the City and County of San Francisco* (San Francisco: San Francisco Planning Department, 2008).

commercial businesses. Access for the public to most areas is restricted, and water access to the Bay is only viable from the parks of Aqua Vista and Warm Water Cove.

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Figure 15: Detail of Windows of the Union Iron Work Machine Shop Building

Figure 16: Neoclassical Cornice. Architectural Detail on Building 101

Note: The buildings' architectural features and materials used for their siding, ranging from stucco, brick and corrugated metal, create a compelling visual texture and depict the site's historic uses.

Memories of the area's past, found throughout the site, include character-defining features, such as the architectural details of some of the buildings, the remains of former Irish Hill, World War II cranes, and various pieces of industrial equipment.

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Figure 17: Remains of Irish Hill
Irish Hill in Pier 70 San Francisco, Pier 70 San Francisco: Historic Shipyard at Potrero Point, Pier 70 San Francisco Website, http://pier70sf.org/history/irish_hill/IrishHill1.jpg (accessed March 8, 2013).

Figure 18: Crane

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Figure 19: View of the Noonan Building

Figure 20: View of Building 6 and the Recycling Facility

Note: 20th Street currently terminates into a large vegetated area facing the recycling center, with the Noonan building, currently occupied by artist studios, to the south, the historic core to the west, and the fenced-off naval facility to the north.

The site has undergone a planning process for revitalization since 2007 culminating in the production of the Pier 70 Preferred Master Plan. The Master Plan, as previously mentioned, is supposed to guide the transformation of Pier 70 over the course of the next twenty years through a series of visions and objectives. The implementation of the Master Plan will require considerable adaptations and bending of current policies, precluding the introduction of new land uses in addition to the existing PDR uses allowed, requiring rezoning (currently zoned M-2 heavy industry), and changes in height limits.[112]

The plan designates about seventeen acres of land to ship repair operations and open space, and the remaining area to other types of mixed uses, including some residential development in upland areas.[113] Most cultural activities will be concentrated along 20th Street, within the area planned for public use, in the "historic core" of the site.[114] The planned open space, on the other

[112] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 45-83.

[113] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 46.

[114] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 48.

hand, will include public and pedestrian spaces in the form of courtyards, small plazas, pedestrian-oriented alleyways, and waterfront parks.[115]

Pier 70's Historic Core

The historic buildings of the "Historic Core" of Pier 70 will be reused and the site enlisted as a federally recognized "National Historic District."[116] The nomination will entitle the Port to tax credits and will provide access to financial programs to be used to finance other objectives of the plan, providing flexibility under local, state and federal regulations for public trust consistency (uses allowed), building code requirements, and environmental reviews.[117]

The Proposed Historic District

This site is the oldest surviving industrial district with the highest concentration of Victorian warehouses on the West Coast of the U.S. It is eligible for listing in the National Register of Historic Places for its association with pioneering technological development of shipbuilding technologies, labor relations, and production of wartime vessels. The period of historic significance for the site is comprised between 1884 and 1945, spanning from the time the Union Iron Works Machine Shop was built to the end of World War II.[118] The most significant historic resources to be included in the National Register are located along 20th Street, also referred to as the Pier 70 Historic Core.[119]

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[115] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 48-49.

[116] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 31.

[117] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 18.

[118] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 17-18.

[119] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 18.

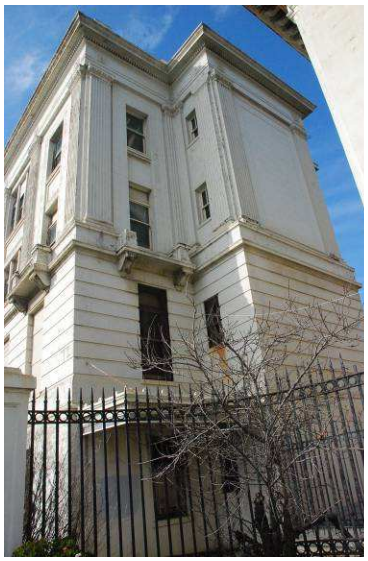

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Figure 21: Building 101

Figure 22: Building 102

Figure 23: The Noonan Building

Note: Buildings 101, 104, 12, and 14 could provide a location for offices and corporate campuses for industries of clean-tech and digital media, and areas for retailers, neighborhood oriented and to support touristic activities.

The Union Iron Work Machine Shop Building and Buildings 6, 102, and 12 could provide areas for exhibition and museum space, film, and performance arts.

Building 11, the Noonan Building, is currently used for activities compatible with the PDR land use, including visual arts such as painting, sculpture, photography, and graphic design.[120]

LEED Neighborhood Development

Specific targets of sustainable urbanism are set for Pier 70 as the Port Commission is exploring the possibility of LEED certifying the district as Neighborhood Development, by Standard by the Green Building Rating System developed by the US Green Building Council.[121]

3.3.2 The Surrounding Communities

Figures from the San Francisco Planning Department's Neighborhoods Socio-Economic Profiles of 2006-2010 provide a general idea of the differences in tenure and economic status existing between the residents of the different neighborhoods (Bayview-Hunters Point and the

[120] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 30-31.

[121] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 68.

Dogpatch/Potrero Hill; see Figure 3 – Map of the area). The report shows that in 2010 the median household income for residents of the Dogpatch and Potrero Hill neighborhoods ($107,161) was more than double the median household income of residents of Bayview-Hunters Point district ($ 44,962), which also counted double the poverty rate (11 percent in the Dogpatch/Potrero Point neighborhoods, versus 20 percent in the Hunter Point District).[122] The level of education and racial component also greatly differed between neighborhoods, and while residents of the Dogpatch and Potrero Hill neighborhoods were predominantly college educated, English-speaking, Caucasians living in non-family households, the Bayview-Hunters Point district, was mainly characterized by an ethnically diverse mixture of family households, mostly African Americans and Asians, with a considerably lower education level (only 12 percent of the residents held a bachelor's degree in 2010, and 9 percent a master's degree).[123]

3.3.3 The Future Neighbors: The Dogpatch

Third Street is the urban element (edge in this case) that separates the planned area of Pier 70 from the Dogpatch neighborhood. A light rail track runs along this large two-way street, which is also the main point of access to the city's financial center and to the southern area of Bayview-Hunters Point district. The street is characterized by a mix of industrial, commercial, office, retail and residential development. And it is also the point where a clear division is marked between the "gross grain" of the fabric of the industrial area of Pier 70 and the regular street grid of the City.

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Figure 24: View of the Western Side of 3rd Street Looking North

Figure 25: View of 3rd Street Light Rail Stop

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[122] San Francisco Planning Department, *San Francisco Neighborhoods Socio-Economic Profiles: 2006-2010 American Community Survey* (San Francisco: San Francisco Planning Department, 2012), 9-59.

[123] San Francisco Planning Department, *San Francisco Neighborhoods Socio-Economic Profiles: 2006-2010 American Community Survey* (San Francisco: San Francisco Planning Department, 2012), 9-59.

The area comprising the Dogpatch neighborhood is approximately nine square blocks, bounded by Mariposa Street, Highway 280, and Illinois Street.[124] The most direct points of access to Pier 70 from the Dogpatch neighborhood are through 20th and 22nd streets, leading respectively to the "Historic Core" of the industrial district and to Irish Hill. The neighborhood counts two parks, Esprit Park and Wood Muni Mini Park, and two schools, the Piccola Scuola Italiana, located at 20th Street, and the Irving M. Scott School, located at Minnesota Street.

Figure 26: Building Footprint Map

Note: The grain of the fabric is very fine at the core of the Dogpatch historic district comprised within the blocks between 3rd and Minnesota streets in the southeastern area of the neighborhood. This area is mainly residential, characterized by historic buildings and a few areas of infill. The grain of the fabric becomes "coarse" in the area between Mariposa and 20th streets, and by the edges of the freeway, given by the prevalence of industrial buildings, the large sidewalks and the abundant parking areas.

The neighborhood, which had been a working-class settlement since the late 1860s, turned into a hub of creative professionals in the 1960s-1970s when many artists, attracted by the cheap rent,

[124] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

moved here from the nearby areas of the Mission and the Castro.[125] This new influx of population brought along new creative industries and start-up companies and started a wave of gentrification that lasted through the mid-1990s.[126] And as the neighborhood become increasingly popular among artists and hipsters, large multi-tenant residential structures consisting of large loft buildings providing live-in work situations were introduced in the historic district. The structures that proliferated during this time, replaced some of the original historic buildings, and began to change the character of the neighborhood.[127] Meanwhile, the area became increasingly attractive to developers because of the connection with downtown the new light rail line on 3rd Street provided and because of the proximity of the new developments of PacBell Park, the UCSF Research Center, and Mission Bay.[128]

Neighborhood Associations and Neighborhood Groups

Residents responded to pressure from developers by forming the Dogpatch Neighborhood Association in 1998. Since then, the association has monitored issues relevant to the neighborhood and its planning, with the goal of preserving the integrity and character of the area.[129] GreenTrust SF-Central Waterfront (GT) is another organization currently involved with the planning of the Dogpatch neighborhood, particularly dedicated to the creation and improvement of open space, green streets, and to the organization of volunteer programs.[130]

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[125] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

[126] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

[127] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

[128] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

[129] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

[130] Mary Purpura, "Open Space, The Final Frontier," *The Potrero View*, January 2010, http://www.potreroview.net/news10294.html (accessed January 12, 2013).

The Historic District

The neighborhood was designated a historic district in 2003, covering a period of significance from 1860 to 1945. It comprises a large collection of 19th and 20th century cottages that survived the earthquake of 1906, seven commercial structures from the late 1800s and early 1900s, and two historic hotels (early 1900s).[131] San Francisco's oldest public school from 1895, and Firehouse 16, built in the 1890s are also located here.[132]

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Figure 27: Pelton Cottages at Minnesota Street

Figure 28: Pelton Cottages at Minnesota Street

Note: Pelton cottages are unique features to this area which can be found on Tennessee, Minnesota, 20th and 22nd streets. This type of cottage was built by following the specification and designs of John Cotter Pelton, an architect from San Francisco. The specs, published for free in the San Francisco evening bulletin between 1880 and 1883, became a popular pattern used to build inexpensive worker's dwellings.

Community Life in the Dogpatch

Today the Dogpatch neighborhood is a fine-grained combination of mixed uses, with most pedestrian activities concentrated in the eastern portion of 22nd Street and in the stretch of 3rd Street between 20th and 23rd streets. The area counts a collection of art galleries, a few restaurants, cafes, an organic butchery, wine tasting, an artist-run workshop, and a few local outlets producing signature clothing and pet accessories. An array of services is also offered by residents (dance/fitness classes, car detailing, and pet services) which use online groups to connect and exchange information.

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[131] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

[132] John Borg, "The Story of Dogpatch," Pier 70 San Francisco, http://pier70sf.org/dogpatch/index.htm (accessed January 30, 2013).

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Figure 29: The Workshop Art Gallery at 22nd Street

Figure 30: Pet Grooming and Accessories

Figure 31: Local Outlet of Bicycle Accessories

Dogpatch residents seem to be supportive of alternative arts and performances, and the neighborhood has for many years hosted events such as the "Burning Man Decompression Party," closing neighborhood streets to traffic to set up art displays and street performances.[133]

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Figure 32: View of Annual Street Event at the Dogpatch,
Burning Man Decompression Party in Foronda's Flickers Site http://www.flickr.com/photos/foronda/2936083137/ (accessed March 8, 2013).

Figure 33: Decompression Party at the Dogpatch
Burning Man Decompression Party in Yelp San Francisco, http://www.yelp.com/biz_photos/decompression-san-francisco (accessed March 8, 2013).

3.3.4 Potrero Hill

Potrero Hill is the residential area occupying the up-hill portion of the western territory of the "Eastern Neighborhoods." Highways I-280 and US 101 play a major role in delineating the

[133] Burning Man, "Black Rock City Year Round: Decompression 2012," BRC Year Round, http://www.burningman.com/blackrockcity_yearround/special_events/decompression/decom2012.html (accessed January 30, 2013).

geographic boundary of the neighborhood, separating it from the Dogpatch to the east and from the Mission District to the west. The Potrero Hill neighborhood connects to the Dogpatch with two traffic ramps, crossing over freeway I-280 at 20th and 18th streets, and to the Mission District with the pedestrian overpass of "Fallen Bridges," crossing over highway US 101 at 18th and Utah streets.

The area counts several neighborhood parks, playgrounds, a few smaller pocket parks and several community gardens. The Potrero Hill Playground and Recreation Center is the park closer to the area of Pier 70, located on top of the hill by the northern edge of the Potrero Annex housing project. The MacKinley Square Park is another significant landmark, located at the western end of 20th Street, offering a view of the Mission District from the slope over US 101. Overall, the neighborhood is not very pedestrian or cyclist-oriented, given the steep topography of the terrain with sudden increases and drops in elevation from one street to the next.

Figure 34: Building Footprint Map

Note: The urban fabric of Potrero Hill is prevalently fine grain, characterized by "town-home" style residential dwellings typical of San Francisco, including many historic buildings of various ages and styles. The residential lots are small, with no setbacks at the front, and with back yards nested in between rows of buildings. The lots containing larger buildings are mainly located in proximity of the industrial area at the north and around areas of 18th Street.

The center of this community is located around 18th, 20th and Connecticut streets, where most pedestrian activities are located, including the several shops and cafes, the Church of Santa Theresa of Avila, the Potrero Hill Health Center, and the Potrero Hill Library.

Residents of the Potrero Hill neighborhood are more conservative and family-oriented than their neighbors of the Dogpatch. And community members seem to be connected through "blogs" and online groups, and to be actively involved with issues of community health, safety and the upkeep of the neighborhood.

Rebuild Potrero Community Group

There are several active community groups operating in the Potrero Hill Neighborhood. The Rebuild Potrero Community Building Group mainly operates in the eastern portion of the neighborhood by organizing volunteer work, fitness classes, and projects to develop community facilities and community gardens. The group also organizes parenting classes and community events, such as street BBQs and street fairs.

Community Life in Potrero Hill

The Potrero Hill Festival is an annual community event organized by the Rebuild Potrero Community Group, with the help and participation of local residents. It often features family-oriented entertainment such as performances by local children, showcasing progress of community efforts, proposing new initiatives, and inaugurating projects of community art.[134]

[134] Rebuild Potrero, "Unite Potrero," Rebuild Potrero Community Building Group, http://unitepotrero.org/ (accessed January 30, 2013).

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Figure 35: Local Kids Playing at a Community Event at Potrero Hill
Children Band at Community Event in Rebuild Potrero Community Group, Unite Potrero Website, http://unitepotrero.org/ (accessed March 8, 2013).

Figure 36: Petting Zoo at a Community Event at Potrero Hill
Petting Zoo at Community Event in Rebuild Potrero Community Group, Unite Potrero Website, http://unitepotrero.org/ (accessed March 8, 2013).

Note: Last year the highlight of the festival was a performance by the young members of the San Francisco Rock Project. The "Rebuild Potrero Community Building Group" also organizes street festivals such as the "Unite Potrero: A community Wide Party," an event for residents and community members including food, music, crafts and family games.

3.3.5 Bayview-Hunters Point, the Potrero Terrace and Potrero Annex Housing Project

The southern edge of the Central Waterfront also neighbors the Bayview-Hunters Point district, an area of southern San Francisco distinctively in contrast with the neighborhoods of the north. Historically populated by minorities and with a history of poverty, activism, and violence, part of the district still to this day is characterized by occasional run-down areas and lingering blights, and was, until recently, considered a food desert because of the scarcity of places to buy fresh produce.[135] The area is, however, very active in initiatives for community development, such as community gardens and food sharing.

[135] Elizabeth Melchor, "Blight Linger in Bayview," *The Potrero View*, September 2012.

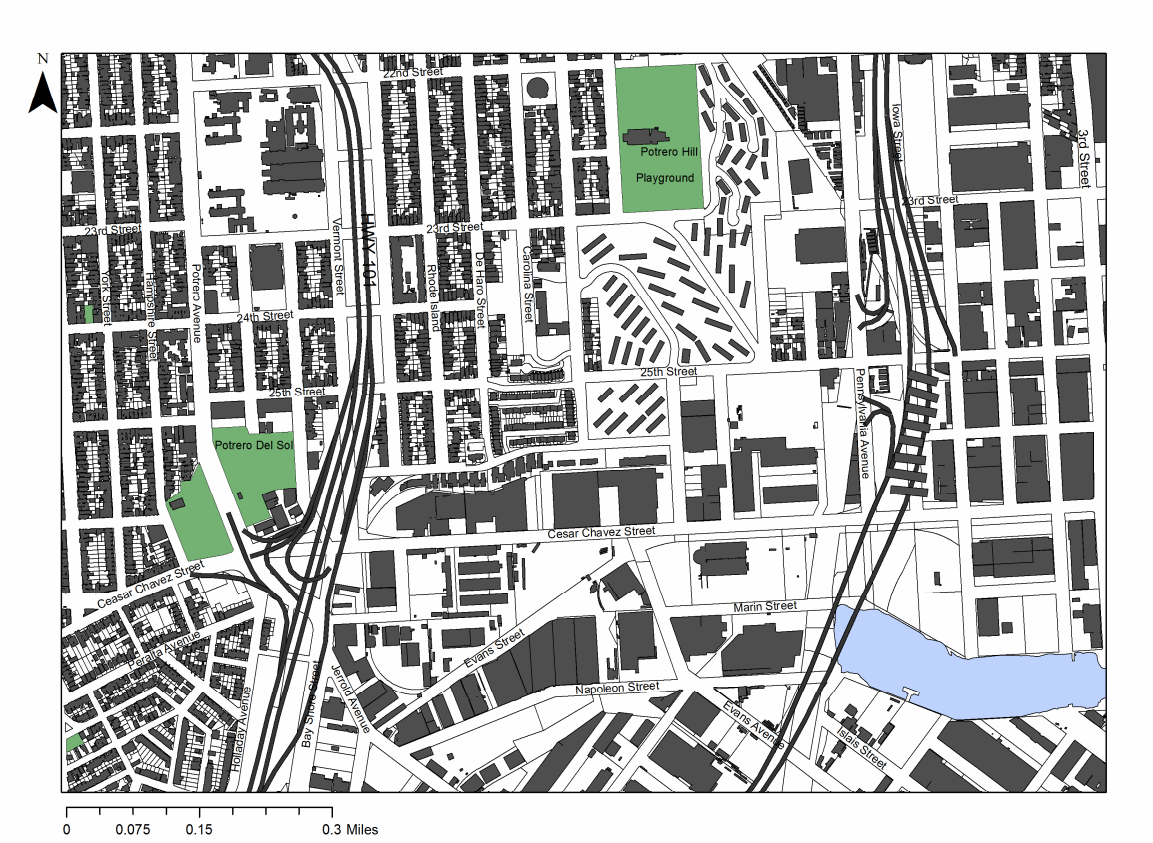

Figure 37: Building Footprint Map

Note: Although, the two areas' jurisdictional boundaries are directly adjoined, their physical separation corresponds to the edge created by the gross grain of the fabric of the industrial areas around 24th Street and Pier 80.

The point where the residential development of the two districts collides corresponds with the Potrero Annex housing project. Located by the edges of the neighborhood of Potrero Hill, the project clearly displays the differences in economic status between the residents of these two areas. These economic boundaries are perceivable in the contrast between the quality of the buildings of the project and the high marketed homes of the neighborhood of Potrero Hill.[136]

The Potrero Terrace and Potrero Annex Housing Projects

The Potrero Terrace and the Potrero Annex Projects are two housing projects that occupy over one-third of the south slope of Potrero Hill.[137] Built in 1991, the project is one of the oldest

[136] Deia De Brito, "Isolated From Potrero Hill's Affluence, the Terrace-Annex Projects Wait for Renewal," *Mission Local*, May 2010, http://missionlocal.org/2010/05/potrero-hills-divide-starts-at-the-terrace-annex/ (accessed January 30, 2013).

[137] HopeSF, "Potrero," HopeSF, http://hope-sf.org/potrero.php (accessed January 30, 2013).

public housing developments in San Francisco, which design, together with the topology of the area, contributes to the isolation of its residents.[138] The residents of the housing project count a large percentage of disabled people and children living in poverty largely dependant on the local resource center.[139] These conditions of poverty are probably also partly the cause of most of the crime occurring in this part of the neighborhood.[140] There is a plan in place to tear down the project and replace it with mixed-income housing and affordable homes, also proposing to resolve current safety issues by eliminating dead end streets and integrating the new public housing to the community fabric.[141]

Community Groups

Community groups in this area include the India Basin Neighborhood Association, the Quesada Gardens Initiative, Literacy for Environmental Justice, the Bayview Merchants' Association, and the Bayview Footprints Collaboration of Community-Building Groups.

Black Activist Groups

The neighborhood has been an important area for activism and African American rights since the 1960s. It was the home of two of the largest black activist groups in the Bay Area, the *Black Panthers* and the *Nation of Islam*; two parties adhering to an ideology of self help that establish programs revolving around black-owned and operated enterprises.[142]

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[138] HopeSF, "Potrero," HopeSF, http://hope-sf.org/potrero.php (accessed January 30, 2013).

[139] Deia De Brito, "Isolated From Potrero Hill's Affluence, the Terrace-Annex Projects Wait for Renewal," *Mission Local*, May 2010, http://missionlocal.org/2010/05/potrero-hills-divide-starts-at-the-terrace-annex/ (accessed January 30, 2013).

[140] Deia De Brito, "Isolated From Potrero Hill's Affluence, the Terrace-Annex Projects Wait for Renewal," *Mission Local*, May 2010, http://missionlocal.org/2010/05/potrero-hills-divide-starts-at-the-terrace-annex/ (accessed January 30, 2013).

[141] Philip Ferrato, "Potrero Annex & Terrace: The Pyramids Went UP Faster," *Curbed San Francisco*, September 2010, http://sf.curbed.com/archives/2010/09/21/potrero_annex_terrace_the_pyramids_went_up_faster.php (accessed January 30, 2013).

[142] Kelley and Verplack, *Bayview-Hunters Point Area B Survey, San Francisco CA, Historic Context Statement* (San Francisco: San Francisco Redevelopment Agency, 2010): 122.

CHAPTER 4: FIELD INVESTIGATION

This chapter describes the three observation methods used to gather data about the site: field observations, observations of physical traces, and behavioral observations. It then presents a brief description of the five core areas that were the focus of the observations, and the interpretation of the results from the study.

4.1 Field Observation

A site observation was part of the initial process to identify the area's physical boundaries and to select specific sites significant for the observation of resident behavior. This phase consisted of recording observations through photographs, sketches, notes, and diagrams directed at identifying the following factors:[143]

- The land use and activities.
- The size of the buildings, the setbacks, and right-of-way of the streets.
- The size, form, age, and apparent use of the buildings.
- The relationship of the buildings with the street.
- The size of the streets and the pedestrian traffic.
- The street landscaping, including the type of plants and street furniture.
- The use of the streets (pedestrians and vehicles).
- The pattern of buildings and streets.
- The apparent use of space.
- The activities performed in each specific area to identify areas where to take readings of user circulation and behavior.
- The evidence of deliberate design and whether these were successful.
- The signs telling the history of the place and its evolution.

4.2 Initial Site Investigation and Determination of "Core Areas"

Initial investigations of the area were conducted to assess its walkability, in terms of physical boundaries and obstacles to pedestrian circulation, its perceivable dimensions, and the urban

[143] All items in the following list are from: Benjamin Grant, "Assignment #1 Field Observation" (assignment directions given out in URBP 151/231: Urban Design in Planning, San Jose State University Urban and Regional Planning Department, Spring 2011).

elements providing orientation. These elements included the identification of connectors, nodes, edges, shape, and scale of the buildings, and the conditions of the streets. The investigations also aimed at assessing the area's community life, the way residents related to each other and to outsiders, and their general attitude towards public behavior and entertainment. Furthermore, these initial site observations had the scope of identifying areas where local public behavior could be observed, intended as the areas most frequented, and those most representative in terms of users and uses. The site was visited weekly through the months comprised between May and September 2012, and each observation was recorded through photographs, sketches, notes and diagrams, and included all elements mentioned in the section above describing the method for field observation. Findings were used to describe the core areas (in the following section) and to produce the site analysis in chapter two.

The five core areas identified to be significant to the behavioral study were the following:

1. Two parks central to the Dogpatch neighborhood and directly linked to key areas of Pier 70, Esprit Park and Wood Muni Mini Park.
2. Potrero Hill Playground and Mini Park, located between two communities of contrasting social economic status.
3. Warm Water Cove, a neglected waterfront park located at the southern edge of Pier 70, a site of activities involving alternative art and music.

Figure 38: Core Areas Identified Suitable for Studies of Users' Behavior.

Note: Five core areas were selected based on findings from the initial site observation, the background research, and priorities set by the review of literature on public spaces. The spatial components prioritized in this selection were the geographical location of the sites, their position in relation to one another and the presence of "connectors." The core areas were also chosen according to the apparent demographic and cultural characteristics of their users

4.3 Description of the Core Areas

4.3.1 Esprit Park

Esprit Park is a 1.83-acre park central to the Dogpatch neighborhood, bounded by Minnesota, Indiana, 19th and 20th streets.[144] The park enjoys a good geographic position, sheltered from the winds and partly shaded for most of the day. It is rectangular shaped, with a large central lawn bordered by a running/walking tract and by trees of various types.

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Figure 39: Exercise Stations at Esprit
Note: Three old wooden exercise stations are located at the northeastern, northwestern, and southwestern corners.

Figure 40: Benches at Esprit
Note: Benches are regularly distributed and spaced around the perimeter of the walking tract, and some are hidden by a planting area at the southern end.

Figure 41: Picnic Table at Esprit
Note: A picnic table is located at the southern end by the eastern entrance of the park, and two others at the northern end.

The vegetation of the park consists of a grove of mature conifers in the center of the meadow and along its western edge. The western edge also contains other shade trees and evergreen species, while most deciduous plants are located on the eastern side of the park. This planting arrangement contributes to the definition of the edges of the envelope of the park by balancing the distinct edge created by the buildings on the northeast, to the area of empty space on the west.
The streets surrounding the park are mainly used by park users and nearby businesses, and are relatively free from traffic. A large area of residual unused space is left between streets and parking areas under the 20th Street ramp crossing the southern edge of the park.

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[144] San Francisco Recreation & Parks, "Destination: Esprit Park," http://sfrecpark.org/destination/esprit-park/ (accessed January 15, 2013); Mary Purpura, "Open Space, The Final Frontier," *The Potrero View*, January 2010, http://www.potreroview.net/news10294.html (accessed January 12, 2013).

Esprit Park was initially a corporate garden established in 1982 by the clothing manufacturing Esprit Corporation, and it was gifted to the City of San Francisco when Esprit moved out of the area in 2001.[145] Although not officially a dog park, the place is heavily frequented by dog owners, and it appears in many websites for travelers with pets, such as Pet Hotels of America and BringFido.com.

Following a debate between two resident groups, the park was divided for a while into an area designated for dog recreation (the southern area), and an area restricted to dogs off-leash (northern area).[146] However, partly due to the absence of a divider and regulatory signs, dog recreation in the park is currently unregulated.[147] A condition generally supported by most residents, which had rejected the proposition for the enforcement of the municipal code mandating leashes for dogs.[148] Residents also seem to prefer the absence of an official dog's area, and despite some concerns about public health and safety, they think of Esprit Park as a valuable area where pets can exercise and socialize.[149]

4.3.2 Wood Yard Mini Park

Wood Yard Mini Park is a block-long miniature park owned by the San Francisco Municipal Transit Authority. It is located along 22nd Street, close to major public transportation nodes. The

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[145] San Francisco Recreation & Parks, "Destination: Esprit Park," http://sfrecpark.org/destination/esprit-park/ (accessed January 15, 2013); Mary Purpura, "Open Space, The Final Frontier," *The Potrero View*, January 2010, http://www.potreroview.net/news10294.html (accessed January 12, 2013).

[146] Karma K (pseud), comment on "Friends of Esprit Park," Yelp.com, comment posted September 29, 2011, http://www.yelp.com/biz/friends-of-espirit-park-san-francisco (accessed January 15, 2013).

[147] Karma K (pseud), comment on "Friends of Esprit Park," Yelp.com, comment posted September 29, 2011, http://www.yelp.com/biz/friends-of-espirit-park-san-francisco (accessed January 15, 2013).

[148] Karma K (pseud), comment on "Friends of Esprit Park," Yelp.com, comment posted September 29, 2011, http://www.yelp.com/biz/friends-of-espirit-park-san-francisco (accessed January 15, 2013).

[149] AK S (pseud), comment on "Friends of Esprit Park," Yelp.com, comment posted July 10, 2012, http://www.yelp.com/biz/friends-of-espirit-park-san-francisco (accessed January 15, 2013); Karma K (pseud), comment on "Friends of Esprit Park," Yelp.com, comment posted September 29, 2011, http://www.yelp.com/biz/friends-of-espirit-park-san-francisco (accessed January 15, 2013); June B (pseud) et al., comment on "Friends of Esprit Park," Yelp.com, comment posted 2009- 2012, http://www.yelp.com/biz/friends-of-espirit-park-san-francisco (accessed January 15, 2013).

park is bounded by 22nd Street to the north, Minnesota Street to the east, Indiana Street to the west, and by the sunken parking lot of the cable car factory to the south.

Wood Yard Mini Park is comprised of two lawns, a sand pit, and two seating areas. The lawns are contained within a three-foot-tall retaining wall and the seating areas consist of two sets of concrete tables and benches with wooden tops, located by the park's external edges. The central area of the park is occupied by the wooden planks and concrete pillars of a former structure. And the sidewalk forms a large continuous concrete slab abutted to the park pavement and completed by regularly spaced planting boxes with "London Plane" trees.

The unbalanced flow of activities due to the concentration of pedestrian amenities along the east side of 22nd Street contributes, together with the wide intersections of the surrounding streets, to the poor definition of the park's envelope.

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Figure 42: View of Wood Yard Mini Park Looking West from Minnesota Street

Figure 43: View of the "Demolished Structure"

Figure 44: View of Eastern Loan, Looking Towards Minnesota Street

4.3.3 Warm Water Cove Park

Warm Water Cove Park is a polluted, isolated area at the end of 24th Street, also known to locals as Toxic Tire Beach.[150] The park is nested between a channel, sided by a DHL facility to the north and by the metal fence of a vehicle storage company to the south, with access from 24th Street, and through an isolated path along the edges of the Bay. The park currently consists of a patchy combination of weedy vegetated areas and in irregularly shaped asphalt areas, with every object (picnic tables, benches, boulders and trashcans) painted green to cover the graffiti.

[150] Mike Ernst, "Warm Water Cove and San Francisco's Eastern Waterfront," Magical Urbanism, entry posted November 20, 2007, www.magicalurbanism.com/archives/171 (accessed January 3, 2013).

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Figure 45: View of Picnic Table at Warm Water Cove

Figure 46: Look out at Warm Water Cove

Figure 47: View of Former Power Plant

Note: One of the picnic tables is located in the center of the park, and another near the entrance by the Bay channel. A wooden bench located under a large shade tree facing the Bay, is a lookout area, offering a view of the maritime facility, of the smokestacks of the former Power Plant, and of the Oakland's port.

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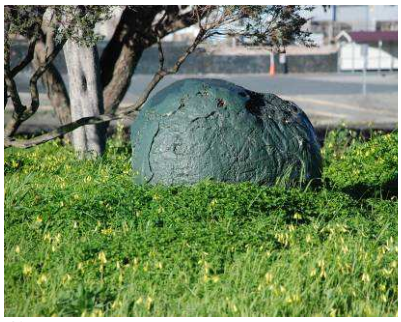

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Figure 48: View of Metal Fence at Warm Water Cove

Figure 49: View of Boulder at Warm Water Cove

Figure 50: Migratory Birds at Warm Water Cove

Note: The vehicle tires and the remains of a demolished bank are used to rest by the storms of migratory birds. The vegetation of the planting beds is random and weedy despite the considerable effort of volunteers at landscaping the park. The lighting seems to be insufficient as only one street lamp is located by the 24th Street entrance.

Warm Water Cove is under the jurisdiction of the Port of San Francisco and part of the Blue Greenway Project, and it is expected to be expanded to connect with 25th Street to close a gap between the Blue Greenway and the San Francisco Bay Trail Network.[151]

This Park is considered by many an important site for the development of modern movements that shaped the youth music and cultural scene in San Francisco from the 70s to the late 90s. The music and art performances that took place here connect to similar worldwide movements of art,

[151] Port of San Francisco, *San Francisco Clean and Safe Neighborhood Parks Bond* (San Francisco: Port of San Francisco, 2012), 28-29.

D.I.Y. hardcore punk music, and underground performances, and this park was one of the few punk rock venues in the Bay Area, as well as the site of an annual festival.[152]

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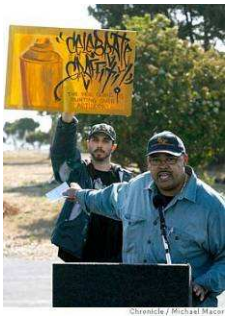

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Graffiti at Warm Water Cove Park *in Bob Egelko, "Graffiti or Art? Park Cleanup Renews Debate," San Francisco Chronicle (*August *2007), http://unitepotrero.org/ (accessed March 8, 2013).*

Figure 51: Metal Fence Before Clean Up

Figure 52: Clean Up Action at Warm Water Cove

Figure 53: Graffiti Supporters at Warm Water Cove

Note: The Park used to exhibit an interesting collection of graffiti art that was destroyed by the clean up efforts. These graffiti were considered by many residents an important part of the local history and folklore of the park.[153]
The article of Peter Plate from 2004 describes the park as a "low-rent version of Stonehenge and a reminder of the town's blue collar history,"[154] and compares it to a Camus' existentialist panorama portraying the "wildlife and transient population of an intriguing and almost fascinating urban tale of the time preceding the area's gentrification."[155]

The park has recently become the focus of local clean up actions and homemade attempts at habitat restoration, including an annual clean up "work party" organized by GreenTrust SF and sponsored by local businesses and residents.[156]

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[152] Shaping San Francisco, "Warm Water Cove," Found SF, http://www.foundsf.org/index.php?title=Warm_Water_Cove (accessed January 3, 2013).

[153] Shaping San Francisco, "Warm Water Cove," Found SF, http://www.foundsf.org/index.php?title=Warm_Water_Cove (accessed January 3, 2013).

[154] Peter Plate, "You Won't Find Any Beach Bums at Warm Cove. Just Birds and Feral Cats. And Trash. The Park Better Known as Tire Beach is a Glorious Urban Wasteland," *San Francisco Cronicle*, August 2008, http://www.sfgate.com/entertainment/article/You-won-t-find-any-beach-bums-at-Warm-Water-Cove-2732502.php (accessed January 12, 2013).

[155] Peter Plate, "You Won't Find Any Beach Bums at Warm Cove. Just Birds and Feral Cats. And Trash. The Park Better Known as Tire Beach is a Glorious Urban Wasteland," *San Francisco Cronicle*, August 2008, http://www.sfgate.com/entertainment/article/You-won-t-find-any-beach-bums-at-Warm-Water-Cove-2732502.php (accessed January 12, 2013).

[156] Shaping San Francisco, "Warm Water Cove," Found SF, http://www.foundsf.org/index.php?title=Warm_Water_Cove (accessed January 3, 2013); GreenTrust FS, "Projects, Warnwater Cove Park Clean Up," GreenTrust FS Central Waterfront, http://gtsfcw.org/projects.htm (accessed January 3, 2013).

4.3.4 Potrero Hill Playground

Potrero Hill Playground and Recreation Center is located on the hill overlooking Bayview-Hunters Point and the Dogpatch neighborhood. This park separates the Potrero Annex housing projects on the southern slope of the hill from the residential neighborhood of Potrero Hill on the northern side. The park is approximately 455,000 square feet and includes play fields, tennis courts, a dog area, two playgrounds, and a recreation center.[157] It is divided in three levels connected by a trail system, accessible from Arkansas, Connecticut, and Missouri streets and from the Potrero Annex housing project. The lower level of the park is occupied by Mini Park, an area designated for dog recreation with access to the local community garden; its middle portion comprises a playground, tennis, and basketball courts, and the upper portion is occupied by the recreation center, a baseball field, and a smaller playground.

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Figure 54: View of the Potrero Hill; Playground in the Middle Level

Figure 55: View of Seating Area by the Entrance of Community Gardens in the Lower Level (Mini Park)

Figure 56: View of Bench Overlooking Trail to Mini Park and the Potrero Hill Neighborhood

Benches are located in several areas, while only a picnic table with a BBQ grill is available by the side of the trail adjoined to the bathroom in the middle portion of the park.

4.4 Observation of Physical Traces

This study consisted of a photographic survey conducted to produce a description of "environmental traces" following the methodology formulated by Zeisel.[158] The study adhered to

[157] San Francisco Port Authority, *San Francisco Clean and Safe Neighborhood Parks Bond* (San Francisco: Port of San Francisco, 2012), 17.

[158] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 89.

the way Zeisel categorizes physical traces in the built environment with the objective of looking for physical signs of activities to determine "how an environment got to be the way it is,"[159] and how it actually gets used by people.[160] These observations provided clues at different stages of the project (including initial insights), grounds to test hypotheses, and suggested the influence of the spatial position of objects over user behavior.[161]

The survey consisted of the observation and recording of traces of activity in the physical environment that were categorized as follows:

I. Byproduct of use: Representing things people do in an environment, consisting of the way they use, misuse, and fail to use a place.[162]
II. Adaptations: Consisting of the deliberate modification of the environment, intended as things people do to a place, and reflecting changes users make to mold an environment to accommodate something they want to do.[163]
III. Display of self: Consisting of changes people make to establish someplace as their own to express their identities.[164]
IV. Missing traces: Consisting of traces indicating that an environment is not being used as intended.[165]
V. Public messages: Consisting of official messages (interpretive signs), unofficial messages (flyers), and illegitimate messages (graffiti).[166]

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[159]John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 89.

[160] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 89.

[161] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 89.

[162] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 101.

[163] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 101.

[164] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 101.

[165] Benjamin Grant, "Term Project Part II: Urban Design Study" (assignment directions given out in URBP 151/ 231: Urban Design in Planning, San Jose State University Urban and Regional Planning Department, Spring 2011).

Traces were evaluated both quantitatively (when possible) and qualitatively and were classified in the following categories:

I. What people do in an environment:
   - By-product of use
   - Adaptation for use

II. What people do to the environment:
   - Display of self
   - Public messages

4.4.1 Initial Observation of Physical Traces

An initial observation of environmental traces was conducted for the area of Pier 70, and for the Dogpatch and Potrero Hill neighborhoods. The purpose of this observation was to determine current activities and uses to create a profile for each area. Traces were also observed in each core area to complement the study of user behavior. And they were recorded with sketches and photographs and classified according to the categories suggested by Zeisel in: byproduct of use, adaptations, display of self, missing traces, official and unofficial public messages. The traces were then evaluated and interpreted to create an attitudinal profile of the users, determine their degree of claimed ownership over the environment, and the degree of control, either official (e.g. municipal codes) or unofficial (resident groups, individuals), exercised over the area.

4.4.2 Traces at Pier 70

Although the site of Pier 70 is destined to change considerably with redevelopment, an observation of traces was conducted to determine any potential repercussion of current uses and users on its future, and to evaluate significant cultural traits related to its recent history and the hierarchical relationship of the historic features.

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[166] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 101.

Traces observed at Pier 70 included official and non-official public messages, various types of byproducts of uses, and missing traces.

Table 1: Environmental Traces at Pier 70		
Public Messages	**Byproduct of uses**	**Missing traces**
Official 1. Business signs 2. Regulatory signs 3. Signs giving direction 4. Warning	1. Fencing 2. Objects depicting homeless camps 3. Buildings and parcels used in ways different from their original purposes 4. Dismissed pieces of equipment 5. Architectural details and materials used on buildings	1. Architectural details and materials on buildings 2. Fencing 3. Empty lots 4. Places and buildings no longer used
Non official 1. Tags 2. Graffiti		

Fencing was the most recurrent trace through the area, often associated to interpretive signs (public messages) imposing restriction on passage, circulation, plus warning about hazards, and environmental contamination. Motor homes parked in hidden areas and objects associated to homeless activities, together with the graffiti on many of the buildings, suggested that illegitimate uses of the site may be taking place.

Graffiti persist at Pier 70 because they are rarely removed during clean up actions, and have built up, overlaying one another, becoming hard to set apart and date. They offered glimpses of the identities of the makers and on the potential activities and territorial distribution of local groups and gangs. And they are also common on vehicles frequenting the site, reconnecting to initial forms of graffiti art executed on moving objects to spread messages through cities.[167] Graffiti at Pier 70 seem to have different meanings depending on their artistic qualities and their location within the site. Those found in proximity of the Noonan building, for example, are more artistic than those on the windows of Building 6. And paintings, such as the one on the door of the Union Iron Work Administrative Office Building, are powerful displays of the political ideas and identity of the artists, especially if placed within the context of the area's recent and past history.

[167] Gregory J. Snyder, "Graffiti Media and the Perpetuation of an Illegal Subculture," *Crime Media Culture* 2, no. 1 (2005): 93-101.

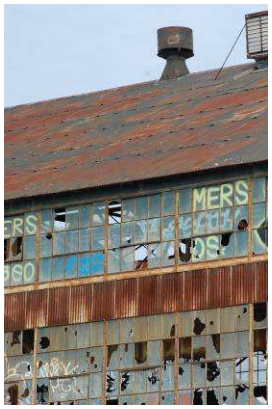

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Figure 57: Graffiti on Building 6

Figure 58: Graffiti at Noonan Building

Figure 59: Graffiti on the Door of Union Iron Work Administrative Office Building

Figure 60: Graffiti Decoration on Dump Truck

Most of the buildings being used through the site are adapted for uses different from those they were originally intended. The Noonan Building, for example, was changed from a mechanic shop into an artist studio, and its interior modified to be suitable to the new activities. The architectural details and the materials used for the siding of the buildings indicate their hierarchical position in the context of other buildings within the site.

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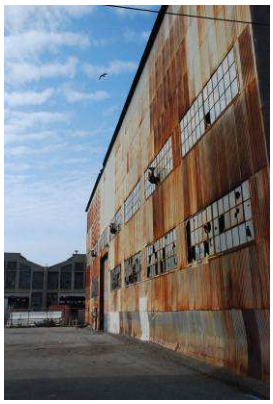

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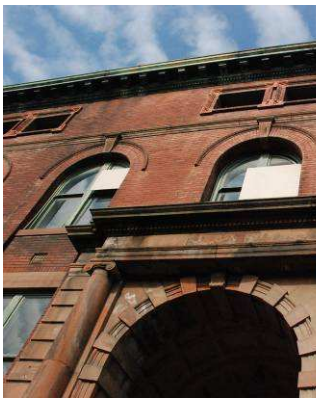

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Figure 61: Architectural Detail on Building at 20th Street

Figure 62: Architectural Window

Figure 63: World War II Warehouse

Figure 64: Architectural Detail on Building at 20th Street

Note: Certain types of architectural treatments are uncommon for industrial buildings. Elaborate decorations and stucco siding on a building in an industrial area suggests its use to have been for administrative operations, rather than for industrial production. The period and use of the building can be also depicted by the shape and size of door openings, materials used for the siding, the type of windows, and the style of the features of its mechanical system (such as smokestacks). Large entrance doors are, therefore, indicative of places used for the storage of large equipment, smokestacks of certain types of industries, brick siding of early industrial buildings, corrugated metal siding of WWII structures, stucco finish and wooden siding of buildings for ancillary uses.

Table 2: Location of Environmental Traces at Pier 70		
Public Messages	**Byproduct of uses**	**Missing traces**
Official Through all areas of the historic core and perimeter of the site *Unofficial* On building 104, building 6, most reachable areas, and in the surroundings of the Noonan Building. Tags and graffiti are also found in some of the interior spaces and in some fenced-off areas.	Fencing is found extensively through the area, mostly around restricted areas and unused structures. Objects depicting homeless camps and motor homes are encountered sporadically, particularly around areas with vegetation and structures that can provide shelter. Most buildings and structures are used in way different from those originally intended. E.g. Noonan Building, Building 6, and most of the warehouses. Dismissed equipment at crane park, unused smokestacks, and cooling ducts. Architectural details of buildings on 20th Street, sash windows of building 6, iron work machine shop, etc.	Buildings on 20th Street.

4.4.3 Traces at Dogpatch Neighborhood

The observation of the neighborhood of the Dogpatch was conducted to determine its current use and users, and to establish its potential relationship with the new development at Pier 70. Traces observed at the Dogpatch neighborhood included official and unofficial public messages, various types of adaptation, display of self, and byproducts of uses.

Table 3: Environmental Traces at the Dogpatch			
Public Messages	**Adaptation**	**Display Of Self**	**Byproduct of use**
Official 1. Street signs 2. Regulatory signs 3. Shop signs *Unofficial* 1. Tagging/graffiti 2. Flyers and other posts on utility poles and trees	1. Formal seating areas 2. Formal adaptation of garages to other uses 3. Use and closure of public areas/made private 4. Formal adaptation of ways of growing flowers and vegetables 5. Areas informally adapted as seating areas 6. Adaptation of private areas to public/semi-public use 7. Using railing and poles to chain bikes	1. Informal sculptures in public places 2. Formal sculptures in public places 3. Placements of icons, signs to claim place and create an identity 4. Historic architectural details 5. Placement of objects in the landscape to encourage and display a preference	1. Dumping 2. Empty Lots 3. Homeless camping 4. Signs of improperly functioning infrastructures 5. Signs of unsuitable street planting 6. Use of areas for illegitimate uses

The scarcity of regulatory signs and the frequent display of unofficial messages (flyers) in public areas suggest this neighborhood to be loosely regulated, and show a lack of interest on behalf of the residents in excessively controlling the environment.

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Figure 65: Flyers Advertising a Meeting of the Local Democratic Party and Yoga Classes

Figure 66: Informal Sign Giving Direction to a Local Coffee Shop

Figure 67: Trash in Proximity of a Regulatory Sign (No Dumping)

Note: The announcement for a Democratic Party's meeting and an advertisement for yoga classes depict particular interests, tastes, and attitudes.

Graffiti are recurrent through the neighborhood, but are hard to quantify because they are regularly removed by clean-up actions. They generally persist in marginal areas, such as on the walls of the terraces of the hills, at the edge of the freeway, and on abandoned buildings.

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Figure 68: Graffiti on the Terrace Along the Freeway at the Dogpatch

Figure 69: Graffiti on Wall at 22nd Street

Figure 70: Graffiti on Wall in an Abandoned Lot

Figure 71: Graffiti on Truck

Note: Tagging is frequent around the freeway and on the terraces of the hill because these areas are hard to reach during clean up efforts. Retaining walls at the perimeters of the neighborhood are also favorite locations for tagging.

Residual space is adapted creatively by both residents and businesses to create seating areas, arcades, and vegetated corners. Hardscape structures, such as poles and railings are sometime used to compensate for the lack of landscaping furniture and other amenities (e.g. bike racks and benches).

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Figure 72: Planting Area Adapted as Seating Area

Figure 73: Planting Pots in Historic District

Figure 74: Garage Space Converted in to a Coffee Shop

Figure 75: Outdoor Dining Area at Local Restaurant

Note: Residents commonly adapt space both formally and informally, by making seating areas on sidewalks, using pots and boxes for planting crops in the historic district, and adapting garages to become areas for business. Restaurants's adaptation of sidewalks for dining is an arrangement common along 22nd Street, as well as the fencing of alleyways to block pedestrian traffic.

Residents tend to display their taste and attitude, and claim ownership of the urban environment, by marking the area with objects and by placing icons and signs on buildings.

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Figure 76: Dog Bags Dispenser

Figure 77: Dog Water Bowl at Local Coffee Shop

Figure 78: SF Hells Angels Headquarter

Figure 79: Adaptation of Self

Note: Objects, such as dog bag dispensers, affixed at various locations through the neighborhood display a dog oriented attitude and are deliberate modification of the environment to meet an end. The icon on the building of the SF Hells Angels Headquarters and other objects found through the neighborhood are also used to personalize the space and to claim its ownership.

Objects are also used formally to confer identities to the neighborhood, create identities for businesses, and reinforce the area belonging to the city, while architectural features place the area within an historic context.

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Figure 80: Historic Dogpatch Saloon

Figure 81: San Francisco Heart Sculpture

Figure 82: Rickshaw at Local Store

Figure 83: Architectural Detail in Historic District

Note: The sign marking the location of the Dogpatch Saloon and the emblematic heart sculpture typical of San Francisco reaffirm the area identity and belonging to the city. Personalized business signs and objects, such as the rickshaw in the picture, are used by business owners to create an identity for businesses. Architectural details are traces helpful to identify styles of buildings and place them within an historical context.

The many unused lots, large sidewalks and underused parking areas in this part of town are associated with the neighborhood's recent industrial history. These and other hidden areas have become locations of dumping, camping, and other illegal activities, and the locations most affected are empty buildings, empty lots around the freeway, and under ramps and overpasses.

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Figure 84: Homeless Camp Along Highway

Figure 85: Car Engine Discarded Under 20th Street Ramp

Figure 86: Illegal Dumping Under 20th Street Ramp

Note: Unused areas hidden from public view (around the freeway, under ramps and overpasses) are sometime used to dispose of trash, to repair vehicles and for transitional living.

Table 4: Location of Environmental Traces in the Dogpatch		
Public Messages	**Byproduct of uses**	**Adaptations and Display of Self**
Official All neighborhood streets and parks.	Empty lots found through the place, in third street, next to the SF Hells Angel Headquarters, below the Potrero Annex Housing project. Unused right of way and extensive parking areas are located all through the most industrial areas, and especially below the traffic ramp of 20th Street, and below the overpass at 22nd Street. Illegal camping on the bushes adjoining the terraces of the freeway.	Business signs along 22nd Street, rickshaw, SF Hells Angels Headquarters, garage converted into a café court at 22nd, garage used for car detailing business, adaptation of sidewalk at Minnesota Street and 22nd Street, sidewalk used for dining at 22nd Street, SF heart sculpture at 20th, architectural details on buildings in the historic district.
Unofficial 22nd Street, Wood Muni Mini Park, Esprit Park, 20th Street, along the freeway, empty lots on 3rd Street, by the western end of 22nd Street.		

4.4.4 Traces at Esprit Park

Physical traces were observed in Esprit Park to complement and better interpret data collected during the observations of user behavior. Traces observed at Esprit Park included official and unofficial public messages, display of self, and byproducts of uses.

Table 5: Environmental Traces at Esprit Park		
Public Messages	**Display of Self**	**Byproduct of Use**
Official 1. Parking regulations 2. Municipal codes 3. Location of parks 4. Regulating dog's behavior 5. Zip car drop off	Items used for dog recreation, bag dispensers, water bowls	1. Improper disposal of dog bag/waste 2. Improper disposal of trash 3. Signs of environmental pollution/noise/air 4. Signs of transit of heavy equipment 5. Sign of non-appropriate street planting
Unofficial 6. Advertises of services offered attached to poles 7. Pet services		

Items used for dog recreation, such as bag dispensers and water bowls, depict a positive attitude for the presence of dogs in the park. This attitude is reinforced by the unofficial messages offering services to dog owners, and by the absence of official messages regulating dogs' behavior.

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Figure 87: Regulatory Sign and Dog Bags Dispenser

Figure 88: Sign Displaying a Municipal Code

Figure 89: Flyer (Unregulated Message)

Note: Signs regulating the presence and behavior of dogs in the park are not clearly displayed; while unofficial messages displayed in the surrounding of the park mainly advertise services revolving around dog owners and other pets.

The scarcity of regulatory signs suggests Esprit Park to be a relatively unregulated place, and residents seem to enjoy this freedom since most dogs are kept off-leash and free to circulate through the lawn. The park, however, displays clear signs of negligence in its upkeep, given by the random disposal of used dog bags, the open trash receptors, and the cracked pavement of the sidewalk.

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Figure 90: Cracked Sidewalk

Figure 91: Cracked Pavement

Figure 92: View of Equipment Rental from Esprit Park

Note: The cracked pavement of the sidewalk suggests that the landscaping has not been upgraded in a while, as pavement-breaking trees have been removed from most city streets. The cranes from the equipment rental and the broken pavement of the street caused by the transit of heavy equipment are a suggestion of high levels of environmental noise.

The amenities located in the areas surrounding the park are, together with the activities performed, a reflection of residents taste and attitude. The Zipcar drop off location, for example, suggests a positive attitude towards alternative transportation and car sharing; and is also indicative that no major implications should derive from a drastic reduction of public parking in the area.

4.4.5 Traces at Wood Mini Park

Traces were observed at Wood Muni Mini Park to complement and better interpret data collected during the observations of user behavior. Traces observed at the Wood Muni Mini Park included official public messages, display of self, and byproducts of uses.

Table 6: Environmental Traces at Wood Mini Park	
Public Messages	**Byproduct of Use**
Official 1. Warning about pet waste	1. Concrete piers and wooden planks left over from a former structure 2. Furniture? 3. Retaining wall used for seating 4. Cigarette buts 5. Cracked sidewalk 6. Pet waste

Ruins of former structures and the cracked sidewalk suggest a certain degree of neglect in the upkeep of this park, and the pet waste and cigarette butts left on the pavement are an indication of poor housekeeping. Users seem to have adapted to the rundown conditions of the park and they frequently come here from the nearby restaurants for post-meal promenades and cigarette breaks. Several messages warning about pet waste and regulating dog behavior are displayed in strategic locations, suggesting that dogs off the leash are less tolerated in this park than in other areas of the neighborhood.

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Figure 93: Seating Area at Wood Mini Park
Note: The formal seating areas are located by the edges of the park.

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Figure 94: Cigarette Butt at Wood Mini Park
Note: The cigarette butts suggest the park to be a popular location for cigarette breaks.

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Figure 95: London Plane Three at Wood Mini Park
Note: The cracked sidewalk and the presence of London Plane trees are an indication that the landscaping has not been updated in a while.

4.4.6 Traces at Warm Water Cove Park

Traces were observed at Warm Water Cove Park to complement and better interpret data collected during the observations of user behavior. Traces observed at the Warm Water Cove Park included official public messages, byproducts of uses, display of self, and adaptations.

Table 7: Environmental Traces at Warm Water Cove Park

Public Messages	**Adaptation/Display of Self**	**Byproduct of Use**
Unofficial 1. Recurrent graffiti on metal fence	1. Graffiti on metal fence 2. Wooden structure used for seating	1. Debris from the former bank 2. Vehicle tires 3. Use of metal fence 4. Wooden structure used for seating by the Bay look out 5. Homeless encampment 6. Storage structure 7. People living in vehicles in nearby parking lot 8. Birds 9. Irregular pavement 10. Trash in unusual locations

The degree of disinvestment and neglect affecting this park is evident in the debris from the demolition of the bank, the vehicle tires dumped in the Bay, the homemade asphalt treatment of the hardscape, and the park's weedy vegetation. The signs of homeless camps and the new graffiti resurfacing on the freshly painted metal fence suggest some of the current uses of this place, and testify to the struggle between social classes and age groups taking place in the area.

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Figure 96: Graffiti on Metal Fence

Figure 97: Graffiti on Bench

Figure 98: Vehicle Tires

Note: The fence is an adaptation because it is regularly used as a canvass to display unofficial public messages by different groups; a condition similarly affecting all objects in the park.

4.4.7 Traces at the Potrero Hill Playground/Mini Park

Traces were observed at Potrero Hill Playground to complement and better interpret data collected during the observations of user behavior. These included official and unofficial public messages, byproducts of uses, displays of self, adaptation, and missing traces.

Table 8: Environmental Traces at Potrero Hill Playground

Public Messages	**Adaptation/Display of Self**	**Byproduct of use**	**Missing traces**
Official 1. Announcements in the community garden board of gardening events 2. Waiting list for plots 3. Regulatory signs in parks and playground 4. Regulatory sign in café	1. Planter box 2. Chairs in the sidewalk 3. Bench decorated with glass beads 4. Mosaic cube 5. Mural on school courtyard 6. Residents effort in landscaping	1. Locked community garden 2. Tennis court 3. Streets used for community events 4. Two playgrounds in the same park 5. Dogs off leash 6. Pet waste disposal 7. Re-landscaping 8. Wildlife	1. Unused BBQ pit at Potrero Hill Playground 2. Locked bathrooms 3. Missing traces in the neighborhood

The many regulatory messages imposing restrictions over uses and behaviors, the locked doors of the community garden and the bathrooms, and the type of recreational structures, suggest that a high degree of control is exercised over this park. The presence of two playgrounds, for example, reduces the area that can be used for informal dwelling, encouraging certain groups to use the place (e.g. families) and discouraging informal (and especially large) gatherings.

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Figure 99: Regulatory Sign at Potrero Hill Playground

Figure 100: Locked Bathrooms at Potrero Hill Playground

Figure 101: Picnic Area at Potrero Hill Playground

Note: No erratic behavior is tolerated in any area of the park, including smoking, littering, and camping. There are also signs prohibiting adults from entering the playground (unless accompanied by a child), and prohibiting dogs from entering most areas of the park. The location of the only BBQ pit, in a very narrow area of transit, is also the indication that gatherings of large groups are discouraged.

The Potrero Hill Playground overall reflects the desire of the residents of Potrero Hill to keep their neighborhood traceless. The public messages display their community oriented and ecologically minded attitude, but also their determination to control the environment of the neighborhood and of the park. The Potrero Hill neighborhood overall reflects this attitude; and is kept very neat and clean, with the only traces to be found in the architectural features of the houses and in the well-crafted furnishing of the sidewalk.

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Figure 102: Schedule of Gardening Events at Local Community Garden

Figure 103: GreenTrust Sign

Figure 104: Sign Posted on a Local Café

Note: A schedule of gardening events displayed by the community garden, and the several boards promoting street greening programs, depict the local support for activities benefiting the environment. The regulatory signs prohibiting dogs from entering public places often posted in the neighborhood, stand in contrast to the attitude welcoming of dogs, exhibited by businesses in the Dogpatch neighborhoods.

The well-maintained landscape of the park has also contributed to the reintroduction of some native animal species.

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Figure 105: Landscaping Project at Potrero Hill Playground

Figure 106: Yellow Slug at Mini Park

Figure 107: Birds at Mini Park

Note: The landscape is often being upgraded, by volunteer's actions organized by the community group. Yellow slugs and several bird species can be found around the community garden, suggesting that the reintroduction of some forms of wildlife might be possible.

4.5 Environmental Behavior Study

The procedure for this field investigation was designed according to the methodology described by Zeisel, consisting of observations of behavior to generate data about user activities

in specific environmental settings.[168] This type of survey typically helps determine "regularities of behavior, expected uses, opportunities and constraints"[169] and provides insights about the importance of "spatial dimensions to human communication"[170] in areas with diverse ethnography. It also allows the observation of "what people really do,"[171] and the identification of "standing patterns of behavior"[172] and "place-specific activities."[173]

This method can generate clues at the beginning of the research, document regularities in the middle, and "locate key explanatory information" [174] late in the research. It can also provide an interpretation of elements influencing user behavior, acting as barriers in the physical environment (e.g. signs), and influencing the relationship of dwellers.[175]

The study was performed in selected "core areas" and the results were used to determine the existing spatial relationship between elements and users, and the interaction among users. Observations were conducted as an outsider, rather than as a participant, to be able to observe interactions and not alter the observed behavior. Recordings included the marking of movements and interaction of people in space on a pre-made diagram and on a pre-coded checklist.[176] A new diagram was started at regular intervals (15 minutes), and each observation lasted one hour. A

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[168] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 111.

[169] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 111.

[170] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 111.

[171] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 111.

[172] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 115.

[173] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 115.

[174] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 116.

[175] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 134.

[176] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 123.

main diagram synthesizing the results was produced for every core area, and was interpreted taking into consideration how existing barriers and field definitions determined user behavior within the space.[177]

4.5.1 Observation of Environmental Behavior at the Core Areas

The study started with an initial observation for each core area to determine the most significant traits and behaviors to set the parameters to observe each site. Four additional observations were made for each park and the following information was collected:

1. Total number of visitors (traffic)
2. Gender and apparent age of visitors
3. Race of visitors
4. Activities performed by visitors
5. Movement of visitors across space
6. Apparent socialization
7. Activity performed and location of activity
8. Direction of traffic

A tally sheet was used to record items 1-4 and a diagram was used to record items 4-8, with a new diagram being filled every fifteen minutes. The visits were made between the time of 11am and 4pm, during different days of the week. The weather during most visits was prevalently sunny, and the temperature, ranging between 44 and 57 degrees, was average for the areas observed. Hypotheses about user behavior for each site were formulated and observed. The hypotheses formulated were that Esprit Park would be used equally for dogs and human recreation, with dog recreation mainly concentrated in the southern end of the meadow; Potrero Hill Playground was expected to be used by a diverse mix of people of different ethnicities and backgrounds; Warm Water Cove was expected to be used scarcely and there were no precise expectation over the uses of the Wood Muni Mini Park and the Mini Park.
The overall results recorded that on average the majority of users were Caucasians (78%), followed by African Americans (11%) and smaller percentages of Hispanics (7%) and Asians (5%). Male adults were the majority (45%) followed by adult females (34%), with rare

[177] John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Cambridge: University Press, 1984), 123-132.

occurrences of elderly and teenagers. It was also recorded that the 20% of the total park users took a dog to the park.

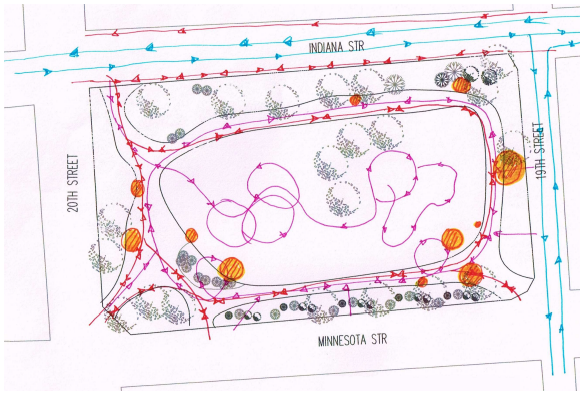
Behavioral Observations at Esprit Park and Wood Muni Mini Park

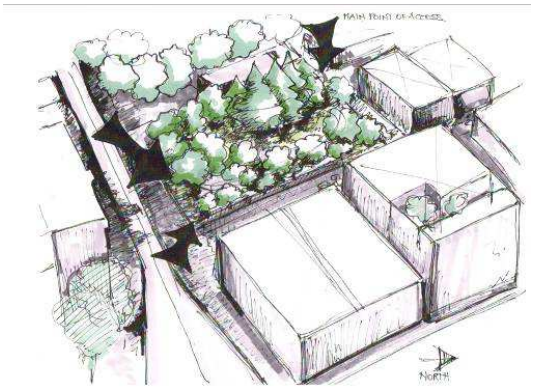
Esprit Park resulted in being the park with the highest amount of traffic (an average of 46 people in an hour), and with the highest number of dog owners (an average of 58% of visitors visited the park with one or more dogs). Visitors to Esprit Park were mostly Caucasian adults (89% Caucasians and 82% adults); very few teenagers (1%) or elderly (9%) visited the park, and children were always accompanied by adults.

Wood Muni Mini Park was also mostly frequented by Caucasian adults (83% Caucasians, 87% adults) with an almost equal percentage of males and females, few adult-supervised children and very few teenagers. Most of the users of this park ate lunch, read, and smoked, and very few came here with a dog (9%).

The day of the week, time, or temperature did not seem to influence the number of visitors to Esprit and Wood Muni Mini parks. Higher numbers of visitors were recorded at Esprit during colder days, also corresponding to days with larger percentages of users with dogs.
The air temperature, however, affected the permanence of users in the parks, which during the coldest days was below fifteen minutes. Activities performed in these two parks were exercising, reading, sitting, smart-phone use, eating lunch, and smoking.

In Esprit Park, user socialization revolved around, and was driven by, dog socialization. In Wood Muni Mini Park, on the other hand, very little socialization occurred in general. Often people walked from the nearby restaurants in pairs and sat in the park talking, drinking coffee, and smoking. The diagrams below summarize the movements of users through space as they were recorded during the four observations.





108. *109.*

Figure 108: Diagram-Esprit Park

Note: Red: pedestrian traffic; magenta: dogs and dog owners; blue: cyclists; yellow globes: stationary activities.

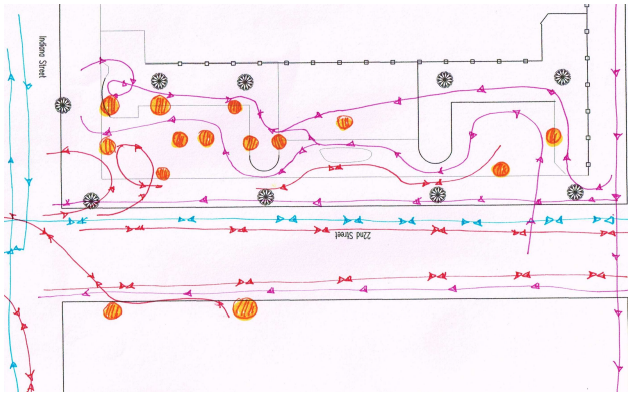
Figure 109: Park Envelope

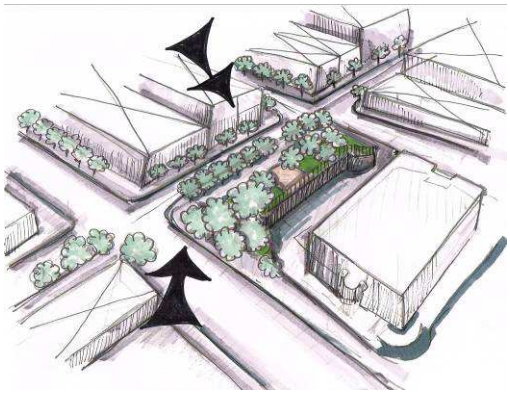
In Esprit Park, users with no dogs typically walked on the path on the perimeter of the park, and rarely used the lawn. This path was used predominantly by park users, while non-users transiting through the area, tended to walk on the sidewalks. Dog owners mainly used inner areas of the park and their distribution varied depending on the number of people and animals on the meadow. They tended to use the southern area of the meadow when users were fewer, but gradually shifted north as the park filled, and favored the area around the redwood grove. People tended to keep dogs on-leash when walking around the park, but released them when entering the meadow, and used this area mainly to exercise dogs. The favorite areas to sit were benches at the north-eastern end of the park, behind planting areas, and picnic tables by the southeastern corner. The northeastern exercise stations were often used, while the one by the southwestern corner was never used. The pedestrian path was also used for jogging and the lawn occasionally for exercising and for playing Frisbee. Cyclists traveled in both directions along Indiana and 19th Street and seldom stopped in the park.

User socialization was driven by the presence of dogs, and dog owners typically did not socialize with non-dog owners. The organic shape of the meadow encouraged mixing as groups could not gather in corners. Group of people tended to gravitate around the tree grove by the western edge of the park, rather than in the open meadow, and seemed to be attracted by large objects (both people and animals). The favorite seating locations were in areas of least expected traffic, away from multiple trails, hidden by vegetation, and in areas far away from empty space. For example, benches in the area with the least points of access (northern area of the park) were generally more used. The park's envelope also seemed to play a determinant role in the distribution of users, as they preferred areas with edges well-defined either by buildings or trees, and seemed to disfavor empty space. The pedestrian path, shaped by the organic form of the meadow, seemed to encourage the clockwise circulation of park users.

Users also chose specific locations according to whether or not they were interested in socializing. An elderly man, for example, often sat on a bench in a high profile location exposed to encounters with dog owners. Vegetation played an important role in separating areas and creating barrier. For example users taking cigarette breaks or eating lunch often sat in areas hidden from sight behind shrubs and trees. The vegetation separating the park from the sidewalk also acted as a barrier and non-park users tended to walk on the sidewalk, rather than on the

trail. The absence of regulatory signs eliminated all barriers as far as behavior and interaction, and users' conduct in Esprit Park could be a good example of the type of behavior to be expected in public areas of this neighborhood if all restrictions were taken away.





110. *111.*

Figure 110: Diagram-Wood Muni Mini Park

Note: Red: pedestrian traffic; magenta: dogs and dog owners; blue: cyclists; yellow globes: stationary activities.

Figure 111: Park Envelope

In Wood Muni Mini Park pedestrian transit was recorded in both directions with a higher intensity of traffic and concentration of users in the northeastern corner of the park. Dog owners used the inner area of the park, generally moving both west to east, or east to west throughout the lawns and the sand box. Children played on the lawns, sandbox, and with the "ruins of the demolished structure." All areas and objects in the landscape were used for seating, including the retaining wall, the lawns, and the planting box. Cyclists traveled in all directions, often stopped, and used railings, gates, and street signs to chain their bikes.

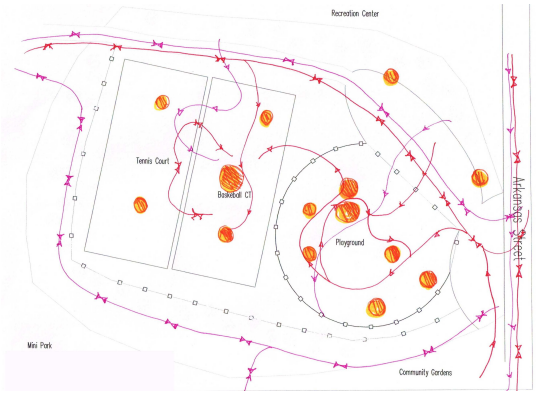
Users preferred to gather in areas closer to the activities of eastern 22nd Street, and rarely used the western area of the park. The lack of tall objects seemed to be disorienting, and users sought and gathered around the largest and tallest structures. They also avoided sitting in proximity of other people and gathered around well-defined areas (corners). The shape of the lawns and the position of trees determined the pattern of movements of both dogs and people. People not intending to use the park, for example, often walked on the opposite side of the line of trees separating the park from the sidewalk. The signs, regulating the presence of dogs also created a barrier and seemed to discourage dog owners from using the park.

Behavioral Observations at Potrero Hill Playground and Mini Park

The racial composition of users seemed to be more diverse in the Potrero Hill Playground than in the other neighborhood parks. But, even if the percentage of African American (20%) and Asian (11%) was slightly higher, the majority of users here was also Caucasian (60%). The average number of users per hour were considerably lower (37) than in parks in the Dogpatch

neighborhood. The air temperature seemed to influence the permanence of people in the playground, but otherwise not to affect people in the basketball field and tennis courts.

The presence of both males (32%) and females (31%) adults was recorded, many of which accompanied children to the playground (24%), or used the tennis and basketball courts (27%). Socialization happened mostly in the sport fields and in the playground, and age seemed to play a fundamental role in children's socialization. Children's interaction in the playground was influenced by the type and orientation of play structures. And the orientation of the play-structures and the shape of the playground also seemed to determine the sequential pattern of children's movements.



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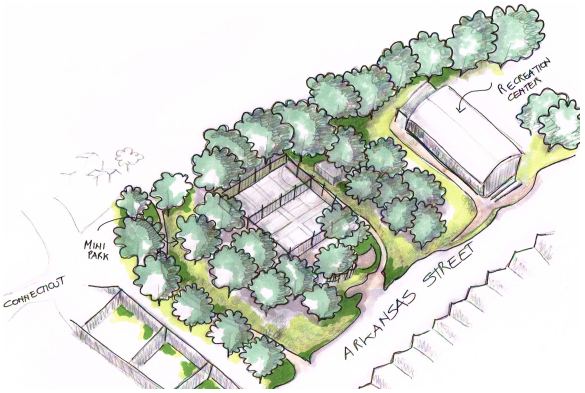


113.

Figure 112: Diagram-Potrero Hill Playground

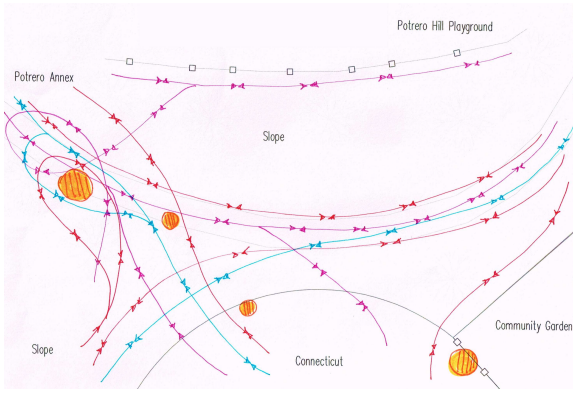
Note: Red: pedestrian traffic; magenta: dogs and dog owners; blue: cyclists; yellow globes: stationary activities.

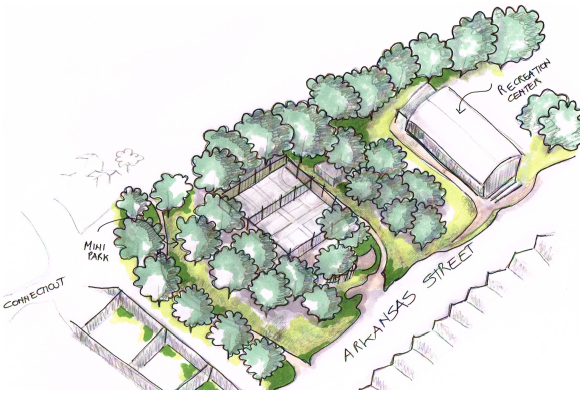
Figure 113: Park Envelope

Pedestrians occasionally traveled east-west along the path, but rarely stopped in the park. Dog owners occasionally transited through the park on their way to the trail leading to the lower area. Park users mainly used the playground and the two sport fields, and they moved through space in a regular pattern, approaching the closest play structure or sport field. The shape of the playground and the orientation of the play structures determined the movement and flow of users (children switched from one play structure to the next depending on the orientation of the structure and prevalently moved clockwise). People never used the BBQ pits or picnic tables, and rarely used the benches along the path. The envelope of this park is very well defined by the tall trees that border and separate the different areas, regardless of the fact that the park is located on a hilltop surrounded by empty space.

Mini Park is the portion dedicated to dog owners located along the slope of the lower portion of the Potrero Hill Playground. This area counted an average traffic of 32 people in an hour, the

majority of whom walked their dogs (24%) or transited between areas (22%). Users's distribution (ethnicity and gender) in this area was similar to that recorded in the upper area of the park.





114. *115.*

Figure 114: Diagram-Mini Park

Note: Red: pedestrian traffic; magenta: dogs and dog owners; blue: cyclists; yellow globes: stationary activities.

Figure 115: Park Envelope

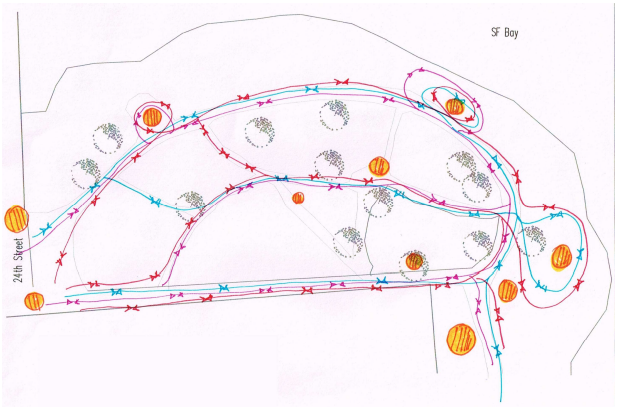
Pedestrians and dog owners transited in all directions, especially from Connecticut to Arkansas streets, from Arkansas to the Potrero Annex, and from the Potrero Annex to Connecticut Street. Dog owners generally approached this area from Connecticut Street and preferred the eastern side of the park. Cyclists traveled east to north and north to east, and sometimes from Connecticut or Potrero Annex to Arkansas Street. Most park users stopped under a tree at a lookout spot on the eastern slope of the park and at a bench by the entrance of the community garden.

Dog owners mostly used the eastern side (left) of the park, located far away from the through-street, and the tree at the lookout was a favorite location for people to stop. The linear shape of the park and the open ends of the path seemed to discourage long permanence.

Behavioral Observations at Warm Water Cove

Warm Water Cove Park averaged 21 visitors per hour, most of which were Caucasian (89%), with a small percentage of African American (10%) and very few Asian and Hispanic. Visitors were mainly adults (90%), a few elderly and teenagers, and virtually no children. Only 4% of users walked their dogs here. Others cycled in, walked, exercised (jogged), and lounged about. The park was frequented by several homeless, who had set up camps in the area along the path leading to 25th Street. The park attracted the most visitors during warm weekends, and the activities more often observed were eating lunch, smoking, drinking beer, and exercising. The

largest number of visitors was recorded during a party weekend when 73 users visited the site in an hour.



116.

117.

Figure 116: Diagram-Warm Water Cove Park

Note: Red: pedestrian traffic; magenta: dogs and dog owners; blue: cyclists; yellow globes: stationary activities.

Figure 117: Park Envelope

Pedestrians typically traveled in a circular counter-clockwise motion, preferring the path along the fence, while cyclists and people with dogs sometimes also traveled in the opposite direction. People only took the central path if nobody occupied the picnic table in the central seating area. The presence of people at any of the picnic tables seemed to divert pedestrian traffic to the opposite direction, while, activities by the lookout spot (by the Bay), on the other hand, attracted it. Pedestrians and cyclists gathered close to each other, but seldom interacted, and explored far away and hidden areas when the park was more populated. During the day of the party, for example, people walked together around the lookout area and to more hidden locations.

Users' movements seemed to be affected by the concern for safety. Pedestrians perceived the area sided by the metal fence as a safer location to walk by, while cyclists and people with dogs were more confident traveling along the edge of the Bay. The central path was seldom traveled, probably because it made park users feel more vulnerable and exposed. People went to hidden areas only when there were other people, but nevertheless, distrusted anybody showing permanence (e.g. people sitting on benches). Here too, users were drawn to larger objects, such as trees, buildings, and fences, and seemed disoriented by the unbalanced combination of open space and enclosures. The large structure of the power station, on the opposite side of the channel to the north of the park, for example, is perceived as an edge of an "enclosure," when in reality empty space is created by the water of the Bay in between the park and the building.

CHAPTER 5: GREENING THE WATERFRONT, AN OPPORTUNITY FOR URBAN SUSTAINABILITY: LITERATURE REVIEW

The review of articles in this chapter discusses people's behavior in public places and the beneficial effects of green urban areas for the environment and for human physiology. The purpose of this literature review is to build a ground of comparison to allow explaining the values invested in public places by the communities of the Central Waterfront, and to assess the benefits that could derive from the introduction of additional vegetated public areas in the neighborhoods.

5.1 Environmental Benefits of Green Urban Areas

This review of the literature on the environmental benefits of green urban areas focuses on the ability of plants to reduce the level of carbon dioxide (CO_2) emission, a factor influencing the quality of life in cities and overall contributing to global warming and climate changes. Strategies allowing the increase of CO_2 sequestration are particularly useful to reduce environmental pollution in high-density urban areas, and for the improvement of air quality in residential neighborhoods adjacent to industrial districts and in proximity of motorways. The residential areas surrounding Pier 70 are particularly affected by high CO_2 levels, due to their proximity to highways I-280 and US 101 and to areas of heavy industry (as mentioned in chapter two's review of environmental conditions). The adoption of strategies to maximize the sequestration of CO_2, such as the planning of urban forests in areas around motorways could help improve the area's air quality and reduce the exposure of residents to illnesses caused by the high concentrations of CO_2.

Urban forests, according to a definition by the Cooperative Forestry Act of 1978, are regarded as a "combination of trees and other plants, planted individually or in small groups in urban areas or suburbs under forest conditions." The three studies reviewed examined the ability of urban forests to take part in the *carbon capture and storage process* (CCS) or *carbon sink*; a process consisting of the isolation of CO_2 from the Earth's atmosphere and of its storage within the tree structure.[178]

[178] William J. Manning, "Plants in Urban Ecosystems: Essential Role of Urban Forest in Urban Metabolism and Succession Toward Sustainability," *International Journal of Sustainable Development of World Ecology* 15, no. 4 (2008): 369; Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 810; Francisco J. Escobedo, Timm Kroeger, and John E Wagner, "Urban Forest and Pollution Mitigation: Analyzing Ecosystem Services and Disservice," *Environmental Pollution* 159, no. 8/9 (2011): 2083.

The positive role of urban forests in reducing CO_2 levels was observed in all three studies and their carbon sequestration abilities was found to be dependent on the specific pollution reduction characteristics of individual plants.[179] Heterogeneity of forest composition, forest layers, and plant ages were also observed to be fundamental for the carbon sequestration process, an ability of plants that also depended on the carbon storage and sequestration rates of individual trees species (conifers or broad leafed evergreen).[180] Zhao et al. emphasized the importance of the "relationship between biomass and plant biotic characteristics,"[181] in the sequestration abilities of urban forests, consisting in a combination of forest age (age of trees), composition (combination of different types of plants), and forest layers (the combination of type and age of trees and under-planting).[182] In general, the carbon sequestration rate recorded was greater for rapidly growing forest and decreased with the forest age, while carbon storage was higher in older forests and diminished during periods of forest decline, culminating with the release of the carbon back into the atmosphere by dead trees.[183]

Escobedo, Kroeger, and Wagner's study suggested that the benefits (services) of human-established forests are different in type and intensity from those of natural forest ecosystems.[184] And the study also identified several costs (disservices) associated with urban forest management,

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[179] William J. Manning, "Plants in Urban Ecosystems: Essential Role of Urban Forest in Urban Metabolism and Succession Toward Sustainability," *International Journal of Sustainable Development of World Ecology* 15, no. 4 (2008): 369; Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 810.

[180] William J. Manning, "Plants in Urban Ecosystems: Essential Role of Urban Forest in Urban Metabolism and Succession Toward Sustainability," *International Journal of Sustainable Development of World Ecology* 15, no. 4 (2008): 362-370; Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 810-812.

[181] Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 810.

[182] Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 812.

[183] Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 812.

[184] Francisco J. Escobedo, Timm Kroeger, and John E Wagner, "Urban Forest and Pollution Mitigation: Analyzing Ecosystem Services and Disservice," *Environmental Pollution* 159, no. 8/9 (2011): 2083.

such as the production of allergens, the release of volatile organic compounds (VOC), leaf litter (clogged city drains), obstructed views, and increased maintenance costs and use of resources.[185] The three studies recognized that the overall benefits of urban forests outweigh environmental and economic costs, and potentially improve the quality of life of residents.[186]

5.2 Physiological Benefits of Green Public Areas to Humans

Green public places are valuable assets for residential communities living in the highly urbanized region of the Bay Area. They provide places for city dwellers to exercise and be in contact with nature, and areas for gatherings to socialize and build networks. The review of articles on green urban areas also found that contact with nature can improve the health of urban communities by preventing some diseases caused by the excessive "artificial stimulation"[187] of modern life, with positive effects on human mental well-being.[188]

The studies reviewed focused on the physiological and psychological benefits derived from the contact of humans with nature, on the physiological and psychological benefits of social capital

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[185] Francisco J. Escobedo, Timm Kroeger, and John E Wagner, "Urban Forest and Pollution Mitigation: Analyzing Ecosystem Services and Disservice," *Environmental Pollution* 159, no. 8/9 (2011): 2081.

[186] William J. Manning, "Plants in Urban Ecosystems: Essential Role of Urban Forest in Urban Metabolism and Succession Toward Sustainability," *International Journal of Sustainable Development of World Ecology* 15, no. 4 (2008): 362-370; Francisco J. Escobedo, Timm Kroeger, and John E Wagner, "Urban Forest and Pollution Mitigation: Analyzing Ecosystem Services and Disservice," *Environmental Pollution* 159, no. 8/9 (2011):2081.

[187] Cecily Maller, Mardie Townsend, Anita Pryor, Peter Brown, and Lawrence St Leger, "Healthy Nature Healthy People: Contact with Nature as an Upstream Promotion Intervention for Populations Health," *Health Promotion International* 21, no. 1 (December 2005):45-54.

[188] H. F. Guite, C. Clark, and G. Ackrill, "The Impact of the Physical and Urban Environment on Mental Well-Being," *Public Health* 120. no. 12 (October 2006): 1117-1126; Frances E. Kuo and William C. Sullivan, "Aggression and Violence in the Inner City: Effects of Environment Via Mental Fatigue," *Environment and Behavior* 33, no. 4 (July 2001): 543-571; Joshua W. Baur and Joanne Tynon, "Small-Scale Urban Nature Parks: Why Should We Care?" *Leisure Sciences* 32, no. 2 (2010): 195-200; Rosie Day and Fiona Wager, "Parks, Streets and Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 509-523; Cecily Maller, Mardie Townsend, Anita Pryor, Peter Brown, and Lawrence St Leger, "Healthy Nature Healthy People: Contact with Nature as an Upstream Promotion Intervention for Populations Health," *Health Promotion International* 21, no. 1 (December 2005): 45-54.

established in public places, and on the effects of the urban environment on human psyche and behavior.[189]

All the studies reviewed universally recognized the benefits of green areas for urban populations, measurable by their direct health benefits (e.g. deriving from better air quality), healthier lifestyle (increased exercise and healthier eating habits), and psychological benefits from increased social capital.[190] Bauer and Tynon, and Day and Wager, noticed the importance of public places as areas for children socialization, for the development of individual identities and of social skills through the endowment of early social capital.[191] The quality and accessibility of public places surrounding residential dwellings also seemed to impact children's identities and sense of worth.[192] And it was noticed that children in lower income neighborhoods with limited access to good quality leisure facilities experienced a higher recurrence of problematic relationships, such as bullying and territorialism.[193] The quality of the urban environment was therefore suggested to have an important effect on people's behavior, with higher level of aggression generally recorded

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[189] Cecily Maller, Mardie Townsend, Anita Pryor, Peter Brown, and Lawrence St Leger, "Healthy Nature Healthy People: Contact with Nature as an Upstream Promotion Intervention for Populations Health," *Health Promotion International* 21, no. 1 (December 2005): 45-54; Joshua W. Baur and Joanne Tynon, "Small-Scale Urban Nature Parks: Why Should We Care?" *Leisure Sciences* 32, no. 2 (2010): 195-200; Rosie Day and Fiona Wager, "Parks, Streets and Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 509-523; H. F. Guite, C. Clark, and G. Ackrill, "The Impact of the Physical and Urban Environment on Mental Well – Being," *Public Health* 120. no. 12 (October 2006): 1117-1126; Frances E. Kuo and William C. Sullivan, "Aggression and Violence in the Inner City: Effects of Environment Via Mental Fatigue," Environment and Behavior 33, no. 4 (July 2001): 543-571.

[190] Joshua W. Baur and Joanne Tynon, "Small-Scale Urban Nature Parks: Why Should We Care?" *Leisure Sciences* 32, no. 2 (2010): 195-200; Rosie Day and Fiona Wager, "Parks, Streets and Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 509-523; Jill Litt, Mah-j. Soobader, Mark S. Turbin; James W. Hale, Michael Buchenau, and Julie A. Marshall, "The Influence of Social Involvement, Neighborhood Aesthetics, and Community Garden Participation on Fruit and Vegetable Consumption," *American Journal of public Health* 101, no. 8 (August 2011): 1466.

[191] Joshua W. Baur and Joanne Tynon, "Small-Scale Urban Nature Parks: Why Should We Care?" *Leisure Sciences* 32, no. 2 (2010): 195-200; Rosie Day and Fiona Wager, "Parks, Streets and "Just Empty Space": The Local Environmental Experience of Children and Young People in a Scottish Study," Local Environment 15, no. 6 (July 2010): 509-523.

[192] Rosie Day and Fiona Wager, "Parks, Streets and Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 510.

[193] Rosie Day and Fiona Wager, "Parks, Streets and Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 521.

in neighborhoods with limited or dilapidated structures.[194] According to studies by Kuo and Sullivan, however, aggressive behavior could be mitigated or even reduced in future generations by the presence of green areas in residential neighborhoods.[195]

Studies by Maller et al. and by Guite, Clark and Ackrill suggested an association between the physical characteristics of the built environment and the populations physical and mental health; indicating that these depended on resident's perception of their own living conditions, together with their perception of safety and in condition of community facilities near residential dwellings.[196] In this regard, Maller et al. also suggested that living in proximity to nature could improve residents' perception of their surroundings, helping to cope with stress and preventing mental illnesses.[197]

The physiological benefits for humans derived from the contact with nature were found to be the improvement of attentive functions, the amelioration of stress, the induction of relaxation of the autonomic nervous system, and the conferment of positive emotions.[198] The hypothesis of the positive effect of nature for lowering the "diastolic blood pressure," for inducing the negative

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[194] Frances E. Kuo and William C. Sullivan, "Aggression and Violence in the Inner City: Effects of Environment Via Mental Fatigue," *Environment and Behavior* 33, no. 4 (July 2001): 557.

[195] Frances E. Kuo and William C. Sullivan, "Aggression and Violence in the Inner City: Effects of Environment Via Mental Fatigue," *Environment and Behavior* 33, no. 4 (July 2001): 562-263.

[196] H. F. Guite, C. Clark, and G. Ackrill, "The Impact of the Physical and Urban Environment on Mental Well –Being," *Public Health* 120, no. 12 (October 2006): 1118-1124.

[197] Cecily Maller, Mardie Townsend, Anita Pryor, Peter Brown, and Lawrence St Leger, "Healthy Nature Healthy People: Contact with Nature as an Upstream Promotion Intervention for Populations," *Health Promotion International* 21, no. 1 (December 2005): 50.

[198] Frances E. Kuo and William C. Sullivan, "Aggression and Violence in the Inner City: Effects of Environment Via Mental Fatigue," *Environment and Behavior* 33, no. 4 (July 2001): 563; Juyoung Lee, Bum-Jin Park, Yuko Tsunetsugu, Takahide Kagawa, and Yoshifumi Miyazaki, "Restorative Effects of Viewing Real Forest Landscapes, Based on a Comparison with Urban Landscapes," *Scandinavian Journal of Forest Research* 24, no. 3 (2009): 227-234.

correlation between physical and mental stress,"[199] and for the response of the human immunological system to natural settings were also supported by some of the studies.[200]

5.3 Community Gardens: Residents' Health, Interaction and Social Processes

The degree of control exercised over the environment seems to have a profound effect over the way relationships are built in the communities of the Central Waterfront. Therefore, the different types of facilities (parks, community centers, playgrounds, and community gardens) and their management models have affected community life in very different ways. The literature reviewed in this section outlines the way different models for managing green urban areas (such as community gardens and neighborhood parks) can affect the development of social processes. It also examines the health benefits derived from activities performed in some of these places (community gardens), their associated social processes, and their contributions to the formation of social capital.

Overall, the activities performed in community gardens were found to encourage the social mixing of people from different cultural backgrounds and ages, useful for the perpetuation of traditions tied to gardening and agriculture.[201] They also seemed to be useful for the treatment of a variety of psychological and social issues, and to promote social inclusion and neighborhood safety.[202] The practice of community gardens also seemed to potentially change people's eating

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[199] Juyoung Lee, Bum-Jin Park, Yuko Tsunetsugu, Takahide Kagawa, and Yoshifumi Miyazaki, "Restorative Effects of Viewing Real Forest Landscapes, Based on a Comparison with Urban Landscapes," Scandinavian Journal of Forest Research 24, no. 3 (2009): 232.

[200] Juyoung Lee, Bum-Jin Park, Yuko Tsunetsugu, Takahide Kagawa, and Yoshifumi Miyazaki, "Restorative Effects of Viewing Real Forest Landscapes, Based on a Comparison with Urban Landscapes," Scandinavian Journal of Forest Research 24, no. 3 (2009): 232.

[201] Joan Twiss, Joy Dickinson, Shirley Duma, and Tania Kleinman, "Community Gardens: Lesson Learned from California Healthy Cities and Communities," *American Journal of Public Health* 93, no. 9 (September 2003):1435.

[202] Ellen Teigh, Joy Amulya, Lisa Bardwell, Michael Buchenau, Julie A. Marshall, and Jill S. Litt, "Collective Efficacy in Denver, Colorado: Strengthening Neighborhoods and Health Through Community Gardens," *Health and Place* 15, no. 4 (2009): 1120-1171; John Ferris, Carol Norman, and Joe Sempik, "People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development," *Social Policy and Administration* 35, no. 5 (December 2001): 559-568.

habits by increasing resident consumption of fruit and vegetables.[203] And, to a certain extent, to provide for shortage of fresh food, resolving issues of "food insecurity" linked to health problems of obesity and diabetes.[204]

Community gardens were also found to be at the base of the development of more politically significant and ecologically minded communities by empowering and motivating individuals and groups through "the psychological and social elements deriving from collectively managing and producing the communal space."[205] The way gardens were managed, however, influenced the degree of participation and involvement of residents with gardening activities. Than and Neo, for example, noticed that Singapore's community gardens were perceived as exclusionary places, because of their association to the government apparatus, and because of the extreme control exercised over their access and security.[206] Eizemberg also found that control was a factor determining the democratic system and overall involvement of residents with garden activities.[207] And that less exclusive models of garden management, and those conferring the most sense of ownership to the gardeners, gave the best results in terms of derived social capital.[208]

Eizemberg's study, therefore, demonstrated that the excessive control over the organization, design and maintenance of community gardens resulted in a much lower degree of social capital.[209] And that the level of control gardeners had over the space seemed to determine their

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[203] Jill Litt, Mah-j. Soobader, Mark S. Turbin; James W. Hale, Michael Buchenau, and Julie A. Marshall, "The Influence of Social Involvement, Neighborhood Aesthetics, and Community Garden Participation on Fruit and Vegetable Consumption," *American Journal of Public Health* 101, no. 8 (august 2011): 1470.

[204] Michelle P. Corrigan, "Growing What You Eat: Developing Community Gardens in Baltimore, Maryland," *Applied Geography* 31, no. 4 (2011): 1234.

[205] Efrat Eizenberg, "The Changing Meaning of Community Space: Two Models of NGO Management of Community Gardens in New York City," *International Journal of Urban and Regional Research* 36, no 1 (January 2012): 108-109.

[206] Leon H. Tan and Harvey Neo, "Community in Bloom: Local Participation of Community Gardens in Urban Singapore," *Local Environment* 14, no. 6 (July 2009): 529-536.

[207] Leon H. Tan and Harvey Neo, "Community in Bloom: Local Participation of Community Gardens in Urban Singapore," *Local Environment* 14, no. 6 (July 2009): 537.

[208] Leon H. Tan and Harvey Neo, "Community in Bloom: Local Participation of Community Gardens in Urban Singapore," *Local Environment* 14, no. 6 (July 2009): 537.

[209] Efrat Eizenberg, "The Changing Meaning of Community Space: Two Models of NGO Management of Community Gardens in New York City," *International Journal of Urban and Regional Research* 36, no 1 (January 2012): 106.

attachment to the garden, becoming "a contradictory relationship to the meaning of public."[210] Together with Than and Neo's example, Eizemberg's study elucidated the effects of physical (restricted access) and psychological exclusion (control) on public space ownership and social capital.

The degree of exclusion (or inclusion), therefore, was observed to be the general rule governing social interaction and the formation of social capital in public places, where the most exclusionary and controlled places would develop the least degree of social capital. Madden provided a good example of how public space is re-conceptualized in the modern city by the semi-privatization of public areas. And he suggested that the privatization (or semi-privatization) of a public area will change its degree of accessibility and perception of freedom of use. The increased social control resulting from the design and excessive security exercised over the private domain of a semi-public area, Madden thought, will decrease the sense of perceived ownership by members of the public.[211]

5.4 Parks: Park Values and Social Interaction

Urban parks are the most traditional types of green urban areas and the first type of green spaces to be introduced to the modern city. The first form of urban park was the *pleasure ground*, dating to the late 1800s. It was followed by the *reform park*, popular between 1900 and 1930,[212] and the *facility park* in use throughout the 1930s.[213] A new type of organizational principle for parks, called the *open space system*, followed in response to the urban crisis of the 1960s.[214] And several new types of urban parks were introduced as the result of this new philosophy of open

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[210] Efrat Eizenberg, "The Changing Meaning of Community Space: Two Models of NGO Management of Community Gardens in New York City," *International Journal of Urban and Regional Research* 36, no 1 (January 2012): 107.

[211] David J. Madden, "Revisiting the End of Public Space: Assembling the Public in an Urban Park," *City & Community* 9, no. 2 (June 2010): 187-207.

[212] David J. Madden, "Revisiting the End of Public Space: Assembling the Public in an Urban Park," *City and Community* 9, no. 2 (June 2010): 192.

[213] David J. Madden, "Revisiting the End of Public Space: Assembling the Public in an Urban Park," *City and Community* 9, no. 2 (June 2010): 193.

[214] David J. Madden, "Revisiting the End of Public Space: Assembling the Public in an Urban Park," *City and Community* 9, no. 2 (June 2010): 193.

space organization, such as the *vest pocket park* and the *adventure playground.*[215] In the Central Waterfront and surrounding areas, parks fall within the latest version of vest pocket parks and follow a spatial logic often driven by the area's development and community values. This section reviews the studies by Talen and Brown to discern the spatial logic associated to the placement of parks within urban contexts, and tries to identify connections with the spatial logic and values governing the distribution and use of the parks of the Central Waterfront.

The studies by Brown and Talen explored the factors influencing the spatial logic for the distribution of parks within urban centers, and the relationship between their size, diversity of users, and distance from living domains, and found that this logic was mainly influenced by the values of the time the specific urban center developed. Talen's study evaluated park distribution according to principles of proximity, diversity and social needs, and suggested that to be equitably distributed parks should be located near areas of low-income, high-density residential development, where open space is most needed.[216] She found, however, that although this logic governed the distribution of parks in development preceding World War II, the location of parks in recent settlements is mainly driven by their effect on real estate values.[217] Brown, on the other hand, suggested that the diversity of park users was determined by the relationship between park size and living domains, and that the values associated to a park were determined by its symbolic significance and physical location.[218] Therefore, according to Brown, the perception of distance-diversity relationship of parks varies according to whether or not they are objects of desire, and that a shifting of values could happen if a park is associated to undesirable features, such as drug trade, graffiti, or litter.[219]

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[215] David J. Madden, "Revisiting the End of Public Space: Assembling the Public in an Urban Park," *City and Community* 9, no. 2 (June 2010): 193.

[216] Emily Talen, "The Spatial Logic of Parks," *Journal of Urban Design* 15, no. 4 (November 2010): 473 - 481.

[217] Emily Talen, "The Spatial Logic of Parks," *Journal of Urban Design* 15, no. 4 (November 2010): 473-491.

[218] Gregory Brown, "A Theory of Urban Park Geography," *Journal of Leisure Research* 40, no. 4 (2008): 589-591.

[219] Gregory Brown, "A Theory of Urban Park Geography," *Journal of Leisure Research* 40, no. 4 (2008): 592-594.

5.5 How Ethnic Groups Use Parks Differently

The review of studies evaluating the way different ethnic groups use parks suggests that parks will be valued differently according to the user's cultural background, ethnicity, and age.[220]And that the diversity of park users (given by people of different cultural backgrounds) will determine the activities and the level of social interaction taking place in the park. Consequently, certain structures and facilities will encourage the presence of certain users, while discouraging others. The fact that parks in the Central Waterfront are mostly frequented by Caucasian adults, therefore, suggests that elements in the design or management of these parks might limit the diversity of users. This section reviews literature observing ways different cultural groups use parks, and the importance parks have in the socialization and networking of the members of these groups.

Studies examining the use of parks by different ethnic groups in Chicago reported a difference in the way Caucasians, Mexicans, African Americans, and Asians used parks.[221] The study by Tinsley, Tinsley, and Croskeys reported that Caucasians and African Americans preferred to visit parks alone or in small groups, while Asians and Hispanics were often accompanied by their extended families.[222] The preference of certain ethnicities to visit parks in large groups was also reported by the Stodolska et al. study on the use of parks by Hispanic communities in Chicago, and by Peters' study on the use of parks by immigrant Muslim communities in the Netherlands. Stodolska et al. found that Hispanic residents tend to use parks for large family gatherings and

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[220]Howard Tinsley, Diane Tinsley, and Chelsey Croskeys, "Park Usage, Social Milieu, and Psychosocial Benefits of Park Use Reported by Older Urban Park Users from Four Ethic Groups," *Leisure Science* 24, no. 2 (2002): 214; Monica Stadolska, Kimberly J. Shinew, Juan Carlos Acevedo, and Dina Izenstark, "Perception of Urban Parks as Havens and Contested Terrains by Mexican-Americans in Chicago Neighborhoods," *Leisure Sciences* 33 no. 2 (March 2011):103-126; Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32, no. 5 (2010): 418-433.

[221] Howard Tinsley, Diane Tinsley, and Chelsey Croskeys, "Park Usage, Social Milieu, and Psychosocial Benefits of Park Use Reported by Older Urban Park Users from Four Ethic Groups," *Leisure Science* 24, no. 2 (2002): 199-218; Monica Stadolska, Kimberly J. Shinew, Juan Carlos Acevedo, and Dina Izenstark, "Perception of Urban Parks as Havens and Contested Terrains by Mexican-Americans in Chicago Neighborhoods," *Leisure Sciences* 33 no. 2 (March 2011):103-126.

[222] Howard Tinsley, Diane Tinsley, and Chelsey Croskeys, "Park Usage, Social Milieu, and Psychosocial Benefits of Park Use Reported by Older Urban Park Users from Four Ethic Groups," *Leisure Science* 24, no. 2 (2002): 209.

celebrations, often compensating for the lack of space in residential dwellings.[223] And that for Latin American communities living in the United States, parks also assume the symbolic role of "centers to community life" plazas have in Latin American culture.[224] Parks were observed by Peters to be used in a similar way by Muslim immigrant communities in the Netherlands, where the gathering of extended families was a custom that Peters attributed to the collectivistic nature of Muslim culture.[225] Parks were found by all the studies to be places useful for building networks for immigrant populations, where in-group socialization and networking were often stimulated but inter-group interaction rarely happened.[226]

Overall, the studies found that the function of parks is determined by their size and location Peters, for example, found that larger parks were active sites of social interaction, while small neighborhood parks were often frequented by local residents for more intimate uses.[227] Stodolska et al. also found that while in the context of wealthy communities parks were places used to relax and socialization, they assumed the role of dividers and became the settings of conflicts and discrimination when located in between neighborhoods populated by minorities.[228]

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[223] Monica Stadolska, Kimberly J. Shinew, Juan Carlos Acevedo, and Dina Izenstark, "Perception of Urban Parks as Havens and Contested Terrains by Mexican-Americans in Chicago Neighborhoods," *Leisure Sciences* 33 no. 2 (March 2011): 104.

[224] Monica Stadolska, Kimberly J. Shinew, Juan Carlos Acevedo, and Dina Izenstark, "Perception of Urban Parks as Havens and Contested Terrains by Mexican-Americans in Chicago Neighborhoods," *Leisure Sciences* 33 no. 2 (March 2011): 112.

[225]Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32, no. 5 (2010): 418-433.

[226] Monica Stadolska, Kimberly J. Shinew, Juan Carlos Acevedo, and Dina Izenstark, "Perception of Urban Parks as Havens and Contested Terrains by Mexican-Americans in Chicago Neighborhoods," *Leisure Sciences* 33 no. 2 (March 2011): 119.

[227] Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32, no. 5 (2010): 426.

[228] Monica Stadolska, Kimberly J. Shinew, Juan Carlos Acevedo, and Dina Izenstark, "Perception of Urban Parks as Havens and Contested Terrains by Mexican-Americans in Chicago Neighborhoods," *Leisure Sciences* 33 no. 2 (March 2011): 117.

5.6 The Role of Public Space in the Formation of Social Capital

Social capital can be described as a collective phenomenon, established by interpersonal relationships among people.[229] It is believed to manifest through structural and cognitive components developed within social networks, consisting of norms, values and beliefs established by the direct link among people in a group ("bonding") and by the connection among different groups ("bridging").[230] Social capital is supposed to have the potential to influence individual actions and mobilize resources, to hold together communities, and to affect neighborhood stability because of the norms and social networks it establishes.[231] Social capital was also mentioned in the earlier sections of the literature review for its catalytic function in the physiological and psychological health benefits derived from positive cognitive perceptions established by the bonding between humans.[232]

Parks, community gardens, and public places in general are believed to be arenas for generating the social processes (bonding and bridging) at the base of the formation of social capital. And in the residential areas of the Central Waterfront, parks are places important to local social life, where residents have the occasion to interact and to get to know each. The literature in this section outlining the potential of different types of public space of generating social capital will be used to interpret the relationship currently existing among users of parks in the Central Waterfront.

5.7 Social Interaction in Public Places

The review of literature assessing the level of social interaction in public places has uncovered that not all types of public places contribute to the same degree of social capital. The level of social capital manifested within each place type, therefore, depends on the level of

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[229] Autumn Thoyre, 'Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 38.

[230] Jean C. Semenza and Tanya L. March, "An Urban Community- Based Intervention to Advance Social Interactions," *Environment and Behavior* 41, no. 1 (2009): 25.

[231] Reinout Kleinhans, "Does Social Capital Affect Residents' Propensity to Move from Restructured Neighborhoods," *Housing Studies* 24, no. 5 (2009): 629-651.

[232] Autumn Thoyre, 'Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 38.

interaction between individuals and groups. The studies reviewed examine the way cultural diversity affects individual interaction in a variety of public places, mainly focusing on cases of diversity resulting from recent immigration, when cultural differences among groups are more prominent. The findings from this review can help assess the current relationship among ethnic minorities that use parks in the Central Waterfront (especially the Potrero Hill Playground), and the potential effect from future increases in diversity caused by an afflux of international population to the new development at Pier 70.

The studies reviewed highlighted that interaction and networks across classes and ethnicities was hard to facilitate in public places because of the different ways different ethnic groups behaved and used the space.[233] And according to Cattell et al. and Peters, the way different groups interpret and are threatened by each other's cultural differences also causes a clash of behavior that could, sometimes, result in conflicts rather than connections.[234]

The meanings different people attach to public places is therefore dependent on each individual's cultural background, linked to personal identities and experiences in particular places.[235] And the degree of freedom a place allows to the exertion of these personal identities, according to Peter, determines the leisure behavior an individual will exert, and the way this individual will react to his or her surroundings.[236]

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[233] Guen Van Eijk and Radboud Engbersen, "Facilitating Light Social Interaction in Public Space: A Collaborative Study in a Dutch Urban Renewal Neighborhood," *Journal of Urban Regeneration and Renewal* 5, no. 1 (2011): 35-50; Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32 no. 5 (2010): 418-433; Vicky Cattel, Nick Dines, Wil Gesler, and Sarah Curtism, "Mingling, Observing, and Lingering: Everyday Public Spaces and Their Implication for Well-Being and Social Relations," *Health & Place* 14, no. 3 (2008): 544-557.

[234] Vicky Cattel, Nick Dines, Wil Gesler, and Sarah Curtism, "Mingling, Observing, and Lingering: Everyday Public Spaces and Their Implication for Well-Being and Social Relations," *Health & Place* 14, no. 3 (2008): 544.

[235] Vicky Cattel, Nick Dines, Wil Gesler, and Sarah Curtism, "Mingling, Observing, and Lingering: Everyday Public Spaces and Their Implication for Well-Being and Social Relations," *Health & Place* 14, no. 3 (2008): 544-561; Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32 no. 5 (2010): 420.

[236] Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32 no. 5 (2010): 420.

Inter-group interaction in public places was found to generate feelings of comfort, but also of conflicts, caused by the cultural differences and differences of behavior among users.[237] Van Eijk and Engbersen proposed that "light social interaction" could be the best way to deal with conflicting social identities caused by social diversity in public places. Therefore, social interaction by providing a "measure of social capital standing in between anonymity and intimacy,"[238] would enable users from different cultural backgrounds to become acquainted with one another and develop feelings of safety and trust.[239] Peters also believed that people often associate with others from similar cultural backgrounds for a matter of understanding one's culture and overall ease of communication, and found that a common language could facilitate social mixing and help integrate immigrant populations into local communities.[240]

5.8 Social Capital and Pro-Environmental Behavior

Because of their potential to generate social capital, public places are also an excellent ground to harbor pro-environmental behavior, a principle (inducing pro-environmental behavior in individuals) that stands at the very foundation of the discourse of sustainability. The review of literature over the factors inducing Pro-Environmental Behavior (PEB) in individuals has suggested that PEB derives from a "higher valuation of individuals of the collective interest over the self interest and from the prevalence of eco-centric values over anthropocentric values."[241] Thoyre's study tried to establish how social capital can facilitate pro-environmental actions, and found that pro-environmental behavior was associated to a "higher valuation of the collective

[237] Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32, no. 5 (2010): 420-422.

[238] Guen Van Eijk and Radboud Engbersen, "Facilitating Light Social Interaction in Public Space: A Collaborative Study in a Dutch Urban Renewal Neighborhood," *Journal of Urban Regeneration and Renewal* 5, no.1 (2011): 36.

[239] Guen Van Eijk and Radboud Engbersen, "Facilitating Light Social Interaction in Public Space: A Collaborative Study in a Dutch Urban Renewal Neighborhood," *Journal of Urban Regeneration and Renewal* 5, no. 1 (2011): 37.

[240] Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32 no. 5 (2010): 420-427.

[241] Autumn Thoyre, "Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 42.

path over the self interest path."[242] Individuals were therefore found to act "pro… environment if they valued the collective interest…[over the] self interest."[243] And the formation of these pro-environmental values was found to be particularly influenced by the "micro level socialization process, [and by] the decision making process of group interaction in social capital."[244] Another study by Larson, Whiting, and Green found that pro-environmental behavior could depend on the biocentric and anthropocentric values of populations and by variables such as race, ethnicity, income, education, genders, and childhood recreation. However, while it was apparent that contact with nature in early childhood considerably influenced the formation of pro-environmental behavior, other variables such as gender, race and social status had little or no weight in PEB.[245] While Tyrone's study suggested that norms of engagement established by social networks can be promoters of pro-environmental actions, and that the cultivation of social networks is fundamental to the formation of eco-minded citizens, Larson found that early childhood education and outdoor participation were fundamental for establishing a positive relationship of individuals with nature (PEB).[246]

5.9 Conclusion

The review of the literature suggests that green areas are important to urban populations because of the direct and indirect benefits they provide. These benefits consist of the improvement of the area's environmental condition and in the physiological and psychological

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[242] Autumn Thoyre, "Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 42.

[243] Autumn Thoyre, "Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 43.

[244] Autumn Thoyre, "Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 38.

[245] Lincoln R. Larson, Jason W. Whiting, and Gary T. Green," Exploring the Influence of Outdoor Recreation Participation on Pro- Environmental Behavior in a Demographically Diverse Population," *Local Environment* 16, no. 1 (January 2011): 67-86.

[246] Autumn Thoyre, "Social Capital as a Facilitator of Pro Environmental Actions in the USA: A Preliminary Examination of Mechanism," *Local Environment* 16, no. 1 (January 2011): 37; Lincoln R. Larson, Jason W. Whiting, and Gary T. Green, "Exploring the Influence of Outdoor Recreation Participation on Pro- Environmental Behavior in a Demographically Diverse Population," *Local Environment* 16, no. 1 (January 2011): 67-86.

benefits derived from contact with nature, from physical exercise, and from the increased social capital generated within these spaces.

Social capital is particularly important for catalyzing some of these health benefits and establishing a neighborhood-wide system of support that can lead, in time, to healthier and more ecologically minded urban communities. Social capital is, however, a complex social construct which will not always necessarily be understood under the same parameters by every resident of the community. Especially in urban areas populated by different cultural and ethnic groups, situations where the groups will enter conflicts because of cultural misunderstanding will be commonplace. It was also noticed that not all public places will contribute to the same degree of social capital, and that the presence of different groups will not be an indication that inter-group interaction will automatically happen. Most public places, however, seem to have a significant role for in-group interaction, where people with similar backgrounds will form or expand their networks. Public places generating the most inter-group interaction are those where participants have more occasions to communicate across groups and ages (such as in community gardens). The degree of participation of the users will also be determined by the accessibility and control exercised over the space. The findings from this review are applied to the results from the study on the communities of the Central Waterfront in the next chapter.

CHAPTER 6: CONCLUSION AND DESCRIPTION OF THE PROPOSED CONCEPTUAL DESIGN

6.1 Conclusion

Kevin Lynch's idea of site planning is based on the understanding of the site as a whole entity, and values the arrangement of the physical environment as well as its social characteristics. The site's physical arrangement would, therefore, allow the understanding of its limitations and potentials, determining the design options that can be pursued.[247]
This chapter concludes the analysis of the Central Waterfront by summarizing findings of the physical and social characteristics of the site described in the previous chapters, to the end of understanding the area's limitations and potentials, and to determine what would work best to connect the existing residential communities to the new development of Pier 70.

6.1.1 Legibility of the Area: Edges, Districts, Paths, Nodes, and Landmarks

Following Kevin Lynch's methodology for site planning, both the social and physical environments of the areas surrounding Pier 70 were assessed. This process included the identification of areas of homogeneity through the analysis of physical and cultural elements, and used Lynch's theory for urban legibility as the logical process to determine the urban elements important for cognitive mental mapping (cognition or recognition/familiarity of an urban area).

The "edges" of the "districts" of the western neighborhood were found in correspondence to natural and man-made territorial boundaries affecting the perception of space. These consisted of changes in land elevation, in variances of the orientation and grain of the urban fabric, and in the presence and size of traffic corridors. The most distinguishing characteristic of the "districts" was, however, their specific social identity given by the tenure and demographics of the residents, their values, and their choices in lifestyle. Other elements important to the areas' "legibility" were the "nodes" of the existing transportation systems and parks, the "paths" provided by the roads, and the "landmarks" consisting of easily recognizable objects and structures.

[247] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 3-5.

6.1.2 The Dialectic of the Districts: Norms, Values, Residents' Interaction, and Social Endeavors

The observation of traces in the physical environment has shown that the residents of the three neighborhoods adjacent to Pier 70 have very distinct social values and lifestyles. The observations also provide a clue of the different ways and activities through which residents bond and bridge social capital and establish shared norms and values.[248]

The neighborhood of the Dogpatch is very relaxed in terms of social control, and although a certain degree of control exists, residents and visitors have the freedom to pursue activities they most enjoy. Residents and local business express their individuality by introducing objects in the physical environment, and by adapting and personalizing space. Repercussions from this loose control are the neglect of infrastructures, illegal use of empty lots (dumping and camping), and property damage (tagging). Residents, however, seem to bond and socialize, by choice and in relation to the activities they do, and although this is a prevalently mono-racial neighborhood there are no apparent signs of social exclusion.

The Potrero Hill Neighborhood is, on the other hand, inhabited by an extremely organized, ecologically minded, and family oriented community that organizes public activities, including community gardens, fitness events, parenting classes, and street festivals. All these activities, organized by the leading neighborhood groups, contribute to the establishment of social capital among residents. The physical environment is kept traceless throughout the entire neighborhood of Potrero Hill, and it is regulated by official signs, props, and design interventions to encourage (and discourage) certain uses and behaviors. Although social integration is encouraged among children, social exclusion seems to happen as a consequence of the extreme control of public behavior.

The third district is the Potrero Annex housing project located at the southern edges of the Potrero Hill Playground, where the Bayview-Hunters Point district adjoins to the eastern neighborhoods. This area comprises a population of low income ethnic (and racial) minorities, characterized by high unemployment rates and by a large number of disabled residents. The area is very isolated both geographically and socially, and has relatively high crime rates. Although the social capital

[248] Jean C. Semenza and Tanya L. March, "An Urban Community- Based Intervention to Advance Social Interactions," *Environment and Behavior* 41, no. 1 (2009): 22-25.

among residents is hard to measure for this area, the Bayview-Hunters Point district, as a whole, is active with social intervention and community building activities through community groups and programs. Despite the controversial history of the housing projects, many of its residents are now actively engaged with establishing a safer living environment.

6.1.3 Social Interaction, Control, and Exclusion

Observation of the behavior of park users allowed me to make assumptions about the role of local parks for in-group socialization. The degree of socialization is exemplified by the freedom allowed to the exertion of individual identities, that strictly depend on the weight given to norms, and on the perception of values and beliefs shared by the residents of each neighborhood.[249]

It was noticed that the park most frequented was also the least controlled (Esprit), and that the crowd mainly consisted of people driven by specific interests and purposes (dogs). This was also the park where the most interaction was generated by a common interest among users, and determined by the activities taking place in the park. The loose degree of social control exercised over Esprit park could also be regarded as both catalytic of these activities (the freedom of taking dogs off-leash to the park) and as empowering for individual sense of ownership over the place. The degree of social control exercised over the park, therefore, seemed to determine both its uses and users. The design of the Potrero Hill Playground, for example, together with the abundance of regulatory signs, has excluded particular categories of users by allocating most of the space to the performance of formal sports and children's activities, discouraging large group gatherings and informal hang-outs.

6.1.4 Elements Influencing the Spatial Distribution of Visitors in Neighborhood Parks

During the observation of user behavior, the effect of objects in the physical environment and how these affected user movements was also assessed. It was observed that people's movement was determined by the location of large objects and the distribution of elements within the park envelope. Park users tended to gravitate around large objects and towards areas of the envelope located near buildings rather than in areas near empty space. The lack of a well-defined envelope (park surrounded by streets intersections and lacking trees to define the perimeter) caused the

[249] Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32, no. 5 (2010): 420.

shift of users towards the area of the park with the most activities. Users also seemed to gravitate around areas of most vitality if socializing, in quieter areas if reading or eating lunch, and in hidden areas if performing activities perceived to be forbidden (smoking).

User behavior and interaction was also greatly influenced by their perception of the quality of structures and security of the park, often determined by the park's physical upkeep and degree of isolation. Behavioral observations in the park of Warm Water Cove, for example, recorded that, unless the user's sense of safety was somehow reinforced by the presence of a dog or by the use of a bicycle, there was a tendency to travel along the metal fence, rather than in open areas along the Bay. In isolated parks visitors were attracted by taller and larger objects and gathered near other visitors, but rarely socialized, displaying both a concern with safety and distrust for other users.

6.1.5 Spatial Logic of Local Neighborhood Parks

The Potrero Hill Playground reflects the spatial logic suggested by both Talen and Brown in the section of the literature review exploring the social values of parks. The park serves a dual function positioned as it is between a low-income community and a high-marketed neighborhood; supposedly serving the social needs of the residents of the housing projects and adding value to the real estate market of Potrero Hill.[250] It could be argued that because of its strategic position, it also serves as a buffer setting apart the middle class neighborhood of Potrero Hill from the area of the housing project.[251] In reality, the park assumes an important social role in providing the residents of the units of the housing project an area for recreation and exercise.[252] The playground in particular is fundamental for the socialization of local children allowing them to communicate across groups, form their identities, and develop social skills, potentially preventing problematic behavior, such as bullying and territorialism, not uncommon in mixed-income communities.[253]

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[250] Emily Talen, "The Spatial Logic of Parks," *Journal of Urban Design* 15, no. 4 (November 2010): 481.

[251] Emily Talen, "The Spatial Logic of Parks," *Journal of Urban Design* 15, no. 4 (November 2010): 473-491.

[252] Frances E. Kuo and William C. Sullivan, "Aggression and Violence in the Inner City: Effects of Environment Via Mental Fatigue," *Environment and Behavior* 33, no. 4 (July 2001): 563.

[253] Joshua W. Baur and Joanne Tynon, "Small-Scale Urban Nature Parks: Why Should We Care?" *Leisure Sciences* 32, no. 2 (2010): 195-200; Rosie Day and Fiona Wager, "Parks, Streets and "Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 509-523; Rosie Day and Fiona Wager, "Parks, Streets and Just Empty Space: The Local Environmental Experience of Children and Young People in a Scottish Study," *Local Environment* 15, no. 6 (July 2010): 521.

The extreme control exercised over the environment of the Potrero Hill Playground, on the other hand, could have the negative effect of decreasing the degree of ownership perceived by members of the public; since, as studies have demonstrated, very controlled environments can reduce benefits derived from resident socialization, preventing the development of social capital to its full potential.[254] The high level of control exercised over the environment of the Potrero Hill Playground, therefore, seems to indirectly cause the exclusion of users that typically use parks for large gatherings and in-group networking.

The parks observed are both economically and socially valuable to the local communities, either as assets adding value to the local real estate market, or as places where social functions, such as socialization and social networking are exerted. The findings from the observation of the five parks are consistent with those of the literature review in discerning that socialization and interaction are more likely to happen among people of similar cultural backgrounds, age, or who display similar interests.[255] Findings from the field study indicate that inter-group interaction and socialization is often generated by activities performed in groups (sport fields and playgrounds), and it is always motivated by similar interests (e.g. dogs in Esprit Park). It was also observed that the position of the objects within the park strongly influenced the movement of people through space. And that the sense of security, degree of control exercised over the facility, and the space allocated to specific structures had a major influence over the type users utilizing the park and in the frequency of its use.

Overall, the results from the study and from the literature review suggest that the introduction of additional green areas in the residential neighborhoods surrounding Pier 70 could be beneficial both for their contribution to the improvement of local environmental condition, and for the physiological and psychological benefits they derive. The introduction of new green public areas could, therefore, increase the livability of the residential neighborhoods surrounding Pier 70 by providing places for recreation, and by alleviating environmental issues caused by the proximity of the freeways and of industrial facilities, such as poor air quality and high noise levels. The benefits derived from the introduction of new public places may also include the increased sense of security catalyzed by the formation of social capital generated by resident interaction, and the

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[254] David J. Madden, "Revisiting the End of Public Space: Assembling the Public in an Urban Park," *City & Community* 9, no. 2 (June 2010): 187-207.

[255] Karin Peters, "Being Together in Urban Parks: Connecting Public Space, Leisure, and Diversity," *Leisure Sciences* 32, no. 5 (2010): 427.

building of healthier and more ecologically-minded communities by facilitating the contact of children with nature.

6.2 Introduction of the Design Concept

The method used for determining the spatial quality of the area of Pier 70 and its surroundings is based on Lynch's categorization of the urban environment. By this method, three distinct "districts" are identifiable within the area of the Central Waterfront (four, if we count Pier 70). These districts are divided by "edges," connected with each other by "paths," and contain the elements Lynch describes as "landmarks" and "nodes." The combination of these "urban elements" creates a mental map of the area, allowing familiarity and navigability. And it is precluded that any design intervention modifying this sequence of elements will affect the perception of space, also modifying the area's legibility.

The analysis of the site enabled us to locate the urban elements allowing this mental map, while the field studies provided important insight to the social life of the communities and the residential neighborhoods. The study also suggested the existence of a social equilibrium making these areas a desirable place to live for current residents, and allowed us to assume that this social equilibrium could be disrupted by an excessive increase in vehicular traffic and activities. According to studies conducted on the livability of streets, a decrease in the quality of social life was therefore observed with the increase of the volume of traffic, because of the decrease of space considered one's own territory.

Studies conducted by Donald Appleyard in the late 1960s, comparing residential streets in San Francisco, showed that residents of streets with a lower volume of traffic had three more friends and twice as many acquaintances than residents of streets with heavier traffic. The reason why people living in streets with heavy traffic had a reduced social life was, according to Appleyard, due to the fact that they had less exchange space to socially interact. Appleyard associated streets with light traffic to closely knit communities, where streets become areas to interact and socialize; conversely, he found that streets with heavy traffic had very little "sidewalk activities" and no feeling of community, especially reflected in children's formation of identities.[256]

[256] Peter Bosselman, Elizabeth Macdonald and Thomas Kronemeyer, "Livable Streets Revisited," *Journal of the American Planning Association* 65, n. 2 (1999): 168-180; Donald Appleyard, *Livable Streets* (Berkeley, CA: University of California Press, 1981), 1-364.

Spatial arrangements should be made to integrate space optimally in light of a "post-development Pier 70" scenario, taking into consideration negative effects that could derive from a direct connection of the residential communities with the new development. Modification in space patterns and changes in spatial arrangements should be, therefore, made to influence activity locations, user interaction, and the way these relate to physical structures.[257]

6.2.1 Objectives, Goals and Hypothetical Design

Studies on the effects of traffic on the social life of residential communities indicate that a connection linking direct traffic flows from Pier 70 to the heart of the nearby neighborhoods might not be either necessary or beneficial. A visual linkage, on the other hand, is necessary to improve the area's spatial integration and aesthetics. Spatial integration through livable streets could also help improve the coexistence of the several social groups, by providing areas where they can familiarize with each other's uses and customs. And it can help induce a climate of tolerance where the development of social capital could translate into community norms, instigating trust and overall improving residents' sense of safety.

This assumption suggests that the overall goal for the design could be that of "inducing a change in the legibility of the area to discourage vehicular flow, while encouraging pedestrian circulation, and of connecting an area "of transition" (in between neighborhoods) to the center of activities of Pier 70 (historic core).

The modification of the area's legibility can be achieved by modifying "paths" (roads) and introducing "nodes" and "landmarks" (visual termini, plazas and other public areas). This change in legibility should serve the purpose of diverging vehicular traffic, but also of visually attracting visitors and enhancing the area's artistic identity (dialectic).

The goals and objectives for the design can be set as follows:

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[257] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 5.

GOALS

The initial goals were set by the research question and consisted in:

1. *Connecting Pier 70 to the existing waterfront and nearby residential areas*
2. *Promoting environmental sustainability, by enhancing the environmental qualities of the area, and reducing the level of CO2 emission from vehicular sources*
3. *Promoting social sustainability by facilitating interpersonal connections among residents, preventing the disruption of existing social and commercial activities, and limiting gentrification*
4. *Using design elements drawing on environmental art and green technologies to visually integrate the several areas, educate the public on environmental issues, and improve the environment.*

The analysis of the site and the studies on user behavior have suggested that the overall goal for the design could also be summarized in changing the area legibility to induce both changes in circulation behavior and in users' perception, enabling us to met the goals set by the research question. The following objectives therefore be set to achieve these goals:

OBJECTIVES (to obtain a change in legibility)

1. *Reducing vehicular traffic flow through the manipulation of the area's circulation system.*
2. *Adding a visual termini, integrating the "historic core" (the future center of public activities) of Pier 70 to the residential neighborhoods, serving both as a visual connection and as a public place to be used by residents and visitors*

The recommendations that follow were formulated from the results of the study in relation to the theoretical approach used to resolve the existing problem of urban fragmentation. These were also driven by the area dialectic, existing uses and past history, and took into consideration the existence of distinct cultural hubs, the necessity of connecting the areas without disrupting existing community life, and the goal of improving the area's environmental conditions and of

enhancing existing cultural activities. These recommendations are elaborated in detail in section 6.3, in a hypothetical design, also showcasing how art installations could be used to enhance public space.

RECOMMENDATIONS

1. *A "visual termini" will have the purpose of introducing elements of environmental art, adding interest and identity to the area. It will enable re-using areas of the street (and right-of-way) for pedestrian use, and serve as a place for social mixing. Its location in "between neighborhoods" (Dogpatch and Potrero Hill) will make it available to the residents from the surrounding communities, and the environmental and public art installations will add to the area's cultural and artistic heritage. It will provide green spaces within reach of the "Historic Core of Pier70" that will not interfere with the design standards set by the Department of the Interior for historic industrial areas.*
2. *If this focal point (visual termini) was to be located at the height of the 20th Street pedestrian ramp, it would also shift the focus away from the heart of the Dogpatch community (22nd Street), delimiting the neighborhood community serving elements from the traffic of visitors from Pier 70.*
3. *The use of the interstitial areas of streets, sidewalks and right of way will create systems of pedestrian circulation, providing public places, paths and vegetated spaces for local recreation, while also improving the area's environmental qualities and biodiversity.*
4. *The design should take advantage of existing programs for city greening, it should adhere to the objectives exemplified by the local Area Plan, and should adopt design guidelines specified by the several plans existing for this area.*
5. *The environmental/public Art installations should be solicited from local artists to enhance the area's dialectic and to contribute to the local economy.*

6.2.2 Manipulation of the Circulation System by Redirecting Traffic Flows

Traffic flows can be diverted and modified by disrupting vehicular traffic through a "deliberate disorder of local streets…to discourage through movements."[258] This solution is typically adopted to isolate public areas from the wider context of streets and traffic, to confer them intimacy and character, and to improve pedestrian safety.[259]

6.2.3 Interstitial Spaces and a Focal Point through a Visual Termini

The creation of public places in interstitial areas of the right-of-way will enhance the individuality and aesthetics of the neighborhood, encouraging resident encounters and socialization.[260] New "nodes" can be created according to each area's dialectic, and the empty lots and underused areas of the streets and parking lots, residual of industrial urbanization, will take the role of the "interstitial areas of porosity" mentioned in Walter Benjamin's theory.

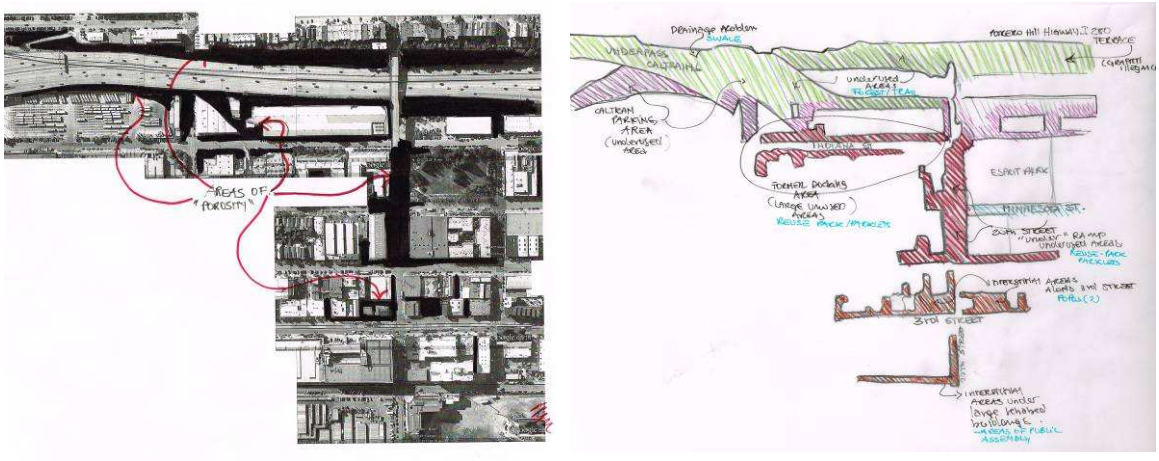

Figure 118: Porosity

Note: Walter Benjamin described porosity as the "…narrow slivers of interstitial space that reveal the porosity of the urban block, blurring distinctions between the public realm and private space and creating a percussive rhythm of alternative positive and negative space, and producing a narrative of place of its identity and character…"[261]

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[258] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 43.

[259] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 43-44.

[260] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 50.

[261] Tanu Sankalia, "Kevin Lynch, Walter Benjamin and Interstitial Space in San Francisco" (paper presented at the conference of the Heritage Agency of Denmark and the University of Copenhagen, World in Denmark 2010, Copenhagen, Denmark, June 17, 2010), 8.

The creation of a "T" junction at 20th Street and the introduction of a "visual termini" with an unusual object (pedestrian ramp), will provide a focal point to visually connect the residential neighborhoods to Pier 70, encouraging and directing pedestrian flow.[262] The new system of pathways, on the other hand, will connect several areas of the neighborhood by emphasizing the underlying topology of the area.[263]

This idea of providing orientation and meaning by creating "vistas" (views) is a concept deriving from 1950s' theories of American civic art based on modernist formalism and Gestalt psychology. This idea was also used by urban designers like Lynch to acknowledge the importance of visual focal points as "psychological anchors for the modern urban inhabitant,"[264] and as "visual reference points for the orientation of the individual within the city."[265]

6.2.4 Existing Programs and Initiatives

The City of San Francisco has several programs in place for the enhancement of open space in this area as well as in other parts of the city. These programs are described below, and are used to create a design program for public places in section 6.2.5.

Central Waterfront Area Plan

An entire set of objectives and policies dedicated to the improvement of the quality of streets, to the maximization of open space, and to the overall enhancement of the area's environmental quality are included in the Central Waterfront Area Plan. These include policies to improve pedestrian circulation and safety, to increase public and open space, to develop new parks, to create a network of green streets, to create linkages between open space and parks, and to reclaim right of way and impermeable surfaces to use as public space and parks.

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[262] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 52.

[263] Kevin Lynch, *Site Planning* (Cambridge, Massachusetts: The MIT Press, 1962), 51.

[264] Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 52.

[265] Sydney William, "Urban Aesthetics," *Town Planning Review* 20 (July 1954): 112, quoted in Anthony Raynsford, "Civic Art in an Age of Cultural Relativism: The Aesthetic Origins of Kevin Lynch's Image of the City," *Journal of Urban Design* 16, no. 1 (February 2011): 52.

The objectives and policies most applicable to this project are summarized in Appendix A and are applied to each phase of the program for the hypothetical design described below.

Open Space and Public Access Planned for Pier 70

The Pier 70 Preferred Master Plan proposes a network of parks, paths, roads, and public places to tie in with plans for a regional and open space system furthered by the Blue Greenway open space effort.[266]

Proposed Network of Pedestrian Promenades

Pedestrian and bicycle circulation shall be provided within the redevelopment of Pier 70 by a network of ways, promenades, and walkways connecting the several public places and the areas of Crane Cove Park and Mirant Potrero Power Plant.[267]

Streetscape and Hard Surfaces Treatment

The historic character of the site, as well as issues of ground contamination will determine the type of ground treatment for the streets and public areas, and the location and distribution of planting areas. Design suggestions and environmental consideration proposed by the Pier 70 Master Plan are summarized in Appendix A.

The Blue Greenway Project: Reconnecting the Waterfront

The area of Pier 70 is in the path of the "Blue Greenway Project" started in 2006 to expand open and public space with the creation of new and open space to connect to the existing area. The program seeks to provide waterfront access and new walking and biking routes along the San Francisco Central and Southern Waterfront.[268] Funded by the 2008 voter-approved Proposition A,

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[266] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 51.

[267] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 55.

[268] San Francisco Port Authority, *Blue Greenway: Planning and Design Guidelines, Revised Draft for Public Review* (San Francisco: San Francisco Department of Public Work, 2011), 1.1.

"Clean and Safe Neighborhood Parks General Obligation (GO) Bond,"[269] the Blue Greenway Project has used a community outreach process to define open space opportunities and design guidelines, as well as standards for signage, amenities, and landscape furnishings.[270]
The Project's goal is the creation of a series of open spaces accessed by the San Francisco Bay Water Trail and connected through existing public streets, right of ways, and waterfront parks.[271] These areas should introduce a balance of a variety of appropriate uses, identify locations for potential entertainment and facilities for special events, and identify locations where the natural habitat could be restored.[272]

Street Greening, Public Places and Pedestrian Routes: Pavement to Parks San Francisco

"Pavement to Park" is a collaborative effort between the San Francisco Planning Department, the Department of Public Works, the Municipal Transportation Agency and the Mayor's Office.[273] This initiative has the objective of reclaiming unused stretches of streets to produce public plazas and parks. It was inspired by a similar effort that turned large portions of New York City streets into pedestrian and seating areas.[274] In San Francisco, the public places designed through this program will test the potential of the selected locations to be permanently reclaimed as public open space.[275] The selection of potential locations is based on the criteria summarized in Appendix A.

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[269] San Francisco Port Authority, *Blue Greenway: Planning and Design Guidelines, Revised Draft for Public Review* (San Francisco: San Francisco Department of Public Work, 2011), 1.2.

[270] San Francisco Port Authority, *Blue Greenway: Planning and Design Guidelines, Revised Draft for Public Review* (San Francisco: San Francisco Department of Public Work, 2011), 1.2.

[271] San Francisco Port Authority, *Blue Greenway: Planning and Design Guidelines, Revised Draft for Public Review* (San Francisco: San Francisco Department of Public Work, 2011), 4.1-4.3.

[272] San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 4.6.

[273] San Francisco Planning Department, "Pavements to Parks: San Francisco," San Francisco Planning Department, http://sfpavementtoparks.sfplanning.org/about.html (accessed December 3, 2012).

[274] San Francisco Planning Department, "Pavements to Parks: San Francisco," San Francisco Planning Department, http://sfpavementtoparks.sfplanning.org/about.html (accessed December 3, 2012).

[275] San Francisco Planning Department, "Pavements to Parks: San Francisco," San Francisco Planning Department, http://sfpavementtoparks.sfplanning.org/about.html (accessed December 3, 2012).

A Plan for Greening the Neighborhood Streets: Plan for Street Greening: 22nd Street/Dogpatch

This document consists of a plan for the greening of the stretch of 22nd Street between 3rd and Pennsylvania streets. The main objective of the plan is to make 22nd Street into a green street, and to connect it to the green streets network proposed by the Eastern Neighborhood Plan. The plan includes programs for enhancing public space for commercial, residential, and institutional users, for inducing traffic calming, improving public safety, and for enhancing pedestrian, bicycle, and mass transit. It also includes plans for the renovation of the 22nd Street Muni Mini Park, for improvements to the area around the 22nd Street rail stop, and for the increase of street planting along 22nd Street. The goals of the Plan are to improve air and water quality, increase biodiversity, and establish a set of tools to be employed for the greening of areas of the neighborhood.[276] A summary of the tools set by the Master Plan are summarized in Appendix A.

6.2.5 Applicability of Existing Programs to the Design of Green Public Areas in the Neighborhoods of the Waterfront

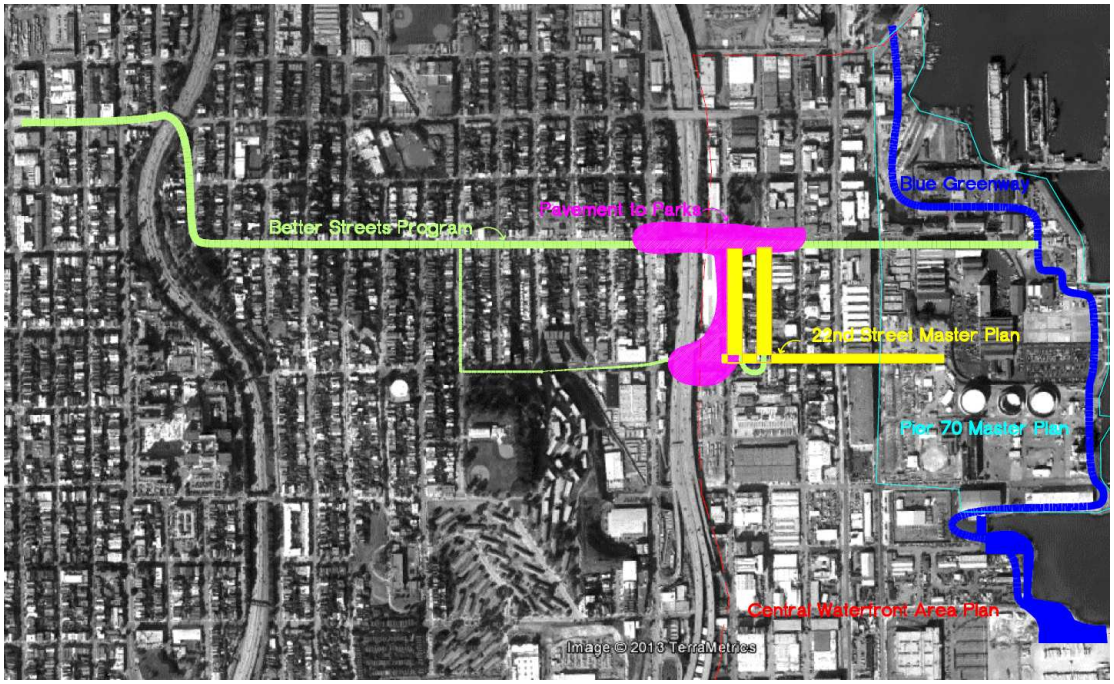


Figure 119: Applicability of Existing Programs
Legend: *Blue-Blue Greenway; red-Central Waterfront Area Plan; yellow-22nd Street Master Plan; magenta-Pavement to Parks; green-Better Streets Program. Source: Aerial Photo by Google Earth*

[276] Fletcher Studio and Nelson Nyagaard Consulting, *Dogpatch/22nd Street Greening* (San Francisco: Greentrust S.F, 2011), 1-54.

The actions proposed with the hypothetical design described in section 6.3 forward the objectives of the planning initiatives of the Pavement to Parks SF Program, the Better Streets Program, the 22nd Street Master Plan, the Blue Greenway effort, and the following policies of the Central Waterfront Area Plan:

APPLICABLE POLICIES FROM THE CENTRAL WATERFRONT AREA PLAN

The following policies are taken from: The *San Francisco Central Waterfront Area Plan*, laid out by the San Francisco Planning Department.

Policy 4.6.4: Facilitate improved pedestrian crossings at several locations to better connect the Central Waterfront and surrounding areas – Potrero Hill, Mission Bay, and Showplace Square.

Policy 4.6.6: Explore opportunities to identify and expand waterfront recreational trails and opportunities including the Bay Trail.

Policy 5.1.1: Identify opportunities to create new public open spaces and provide at least one new public open space serving the Central Waterfront.

Policy 5.3.1: Redesign underutilized portions of streets as public open spaces, including widened sidewalks or medians, curb bulb-outs, "living streets" or green connector streets.

Policy 5.3.2: Maximize sidewalk landscaping, street trees and pedestrian scale street furnishing to the greatest extent feasible.

Policy 5.3.5: Significant above-grade infrastructure, such as freeways, should be retrofitted with architectural lighting to foster pedestrian connections beneath.

Policy 5.3.9: Explore opportunities to identify and expand waterfront recreational trails and opportunities including the Bay Trail and Blue-Greenway.

Policy 5.4.1: Increase the environmental sustainability of Central Waterfronts system of public and private open spaces by improving the ecological functioning of all open space.

Policy 5.4.2: Explore ways to retrofit existing parking and paved areas to minimize negative impacts on microclimate and allow for storm water infiltration.

Policy 5.4.3: Encourage public art in existing and proposed open spaces

6.3 The Hypothetical Design: Creating New Paths, Nodes and Landmarks

This section describes a hypothetical design exemplifying the goals and objectives and elaborating on the recommendations discussed in section 6.2. It starts by formulating a "design program," illustrating the combination, purpose and distribution of the various design elements (greenways, pedestrian linkages, vehicular circulation, pedestrian areas, green streets, etc.), and follows by giving a demonstration of the type of elements the design could incorporate.

6.3.1 The Program: Making the Dogpatch into a Through-traffic-free Zone

The redevelopment of Pier 70 could cause a substantial increase in vehicle traffic, with areas of congestions around intersections of local neighborhoods.[277] This situation could be alleviated by redirecting automobile traffic, by partially closing streets to through traffic and redesigning them following the guidelines of the "Better Streets Program."

Automobile traffic directed to Pier 70 should be re-routed through Illinois Street, away from the neighborhood of the Dogpatch, and should be restricted in the eastern part of 20th Street. The purpose of the program below is of restricting vehicular traffic in residential areas and of creating pedestrian connections through various areas of the waterfront.

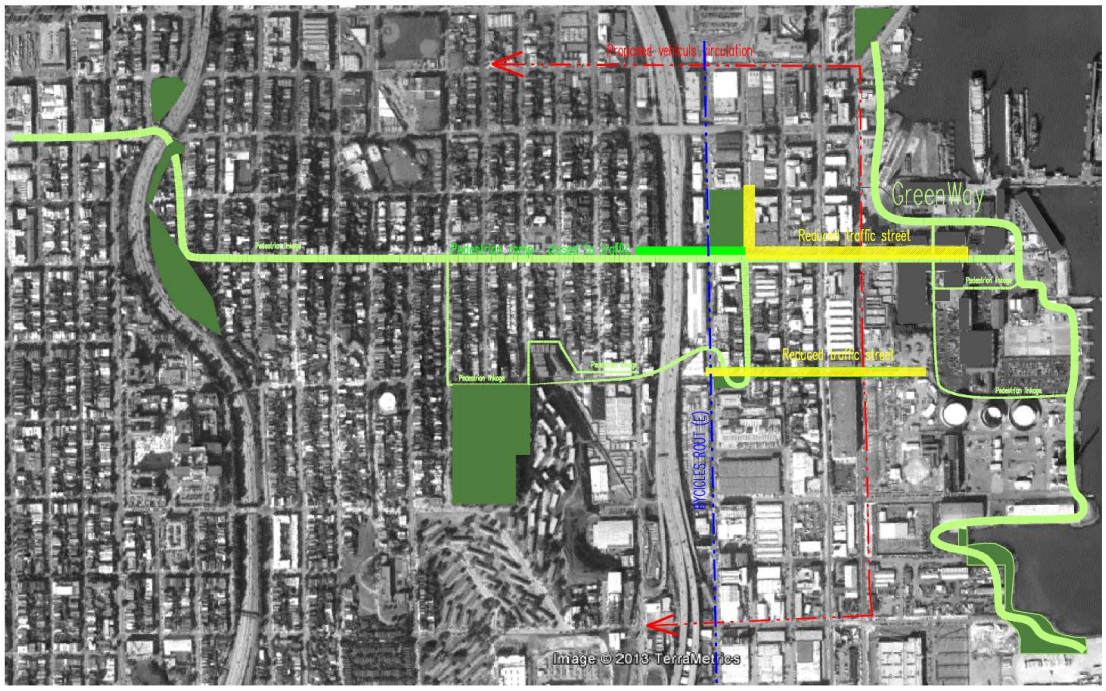


Figure 120: Proposed Program
Legend: *Red-vehicular traffic; light green-greenways and green streets; yellow-reduced traffic streets; bright breen-pedestrian ramp, closed to traffic; blue-bicycle route. Source: Aerial Photo by Google Earth.*

Note: A design for public spaces can open the area to a flux of activities, but can also slow down, regulate, or even block the traffic. This hypothetical design proposes the restriction of through traffic in the area of 20th Street by making the existing traffic ramp into a landscaped pedestrian promenade. It precludes the enlargement of Esprit Park by the creation of public space through the reclamation of the area below the 20th Street traffic ramp. It also envisions the extension of the planned green streets network, the construction of a vegetated swale and the establishment of an urban forest in the area surrounding the I-280 freeway. And it precludes the creation of an area of pedestrian circulation by introducing new "paths" and "nodes" and by connecting significant residential areas to areas of Pier 70.

[277] San Francisco Planning Department, *Eastern Neighborhoods Rezoning and Area Plans: Draft Environmental Impact Report* (San Francisco: San Francisco Planning Department, 2007), 9-20.

6.3.2 The Design: How Design Elements Can Change the Area's Legibility

This section exemplifies the hypothetical design developed to demonstrate the design program in section 6.3.1. The design utilizes elements from existing projects of environmental art to illustrate the potentiality of art to enhance public areas and to be used in more or less functional ways (sculptures can be functional, e.g. used for seating).

It is, however, important that site specific installations are created for each specific area, as existing art (such as the installations used for this demonstration) should never be replicated. Environmental and public art is an appropriate method to enhance this area's identity because of its historic population of artists (enhancing the area's dialectic). It can also be an occasion to bring residents together through the organization of community design projects, or design competitions for local artists. Studies have demonstrated that projects of community design have also the potential to catalyze and spread social networks with activities involving participants' cooperation and communal work. Involving local artists in the design of environmental art installations can therefore help develop the cognitive social capital and increase residents' sense of belonging and safety, translating into shared norms and values, trust and reciprocity.[278] The hypothetical design illustrates the goals and objectives discussed in section 6.2, and could include the elements described below:

[278] Jean C. Semenza and Tanya L. March, "An Urban Community- Based Intervention to Advance Social Interactions," *Environment and Behavior* 41, no. 1 (2009): 22-23.

RECOMMENDATIONS: DESIGN ELEMENTS

A. *Establish an area of safety for pedestrians and animals around Esprit Park*
B. *Introduce a central planting area to act as traffic calming and areas for historic interpretation along Minnesota Street*
C. *Add a green feature to create a visual linkage between the Dogpatch neighborhood and Pier 70*
D. *Extend Esprit Park onto the unused area of right-of-way under the 20th Street overpass*
E. *Make Indiana Street into a "Green Connector Street"*
F. *Connect Pier 70 to the inner city system of green streets*
G. *Restore the natural environment: plan an urban forest (and vegetated swale) in the area surrounding I-280*
H. *Create eco-parks at Mini Park and Warm Water Cove*
I. *Design a greenway for Pier 70*
J. *Make Warm Water Cove into a significant cultural "node"*

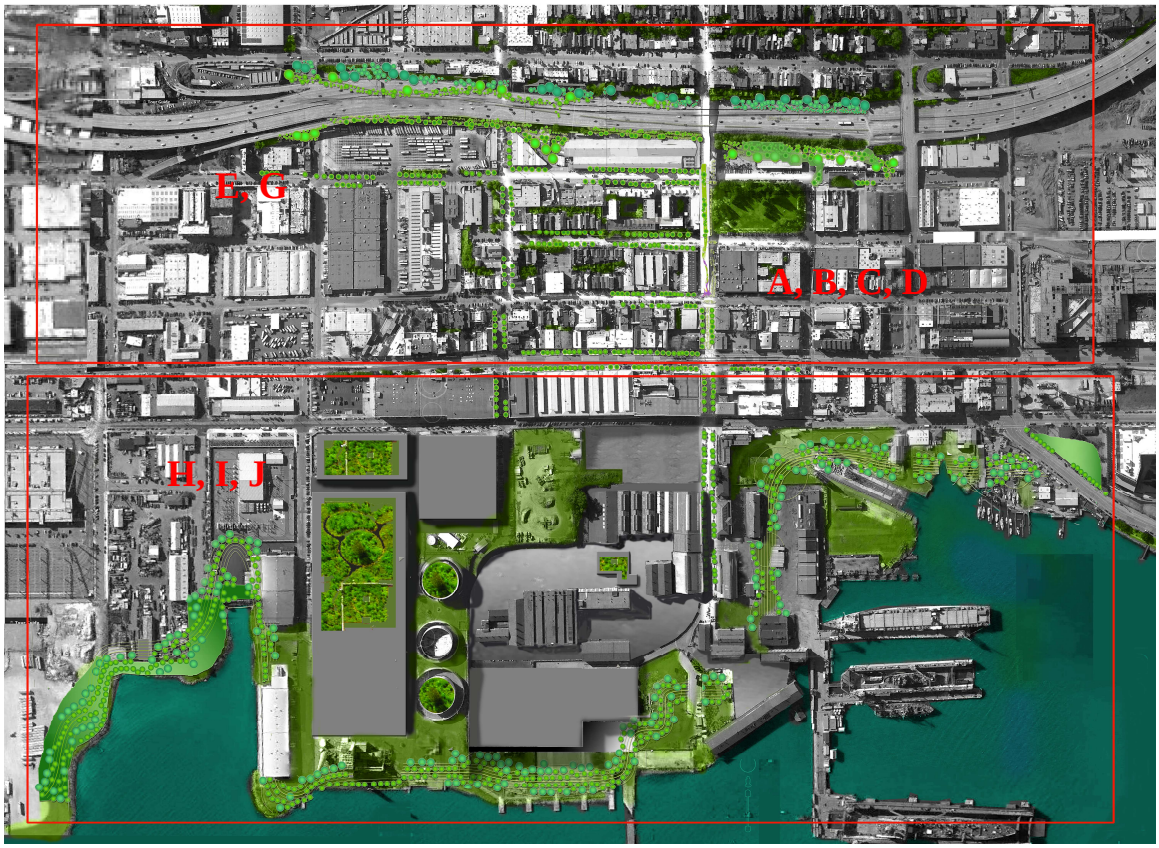


Figure 121: Proposed Plan for Pier 70 with Connection to Neighborhoods

Figure 122: Proposed Plan for Pier 70 with Connection to City Green Streets Network

A. Establish an area of safety for pedestrians (and animals) around Esprit Park

Minnesota and 20th streets are key points of access to the residential areas of the Dogpatch and of Potrero Hill neighborhoods, directly linked to the "historic core" of Pier 70. To direct vehicular "flow" away from these residential neighborhoods, selected areas of Minnesota and 20th streets should be restricted from vehicular through traffic by the action described below.

B. Introduce a central planting area to act as traffic calming, and areas for historic interpretation along Minnesota Street (create a path)

Minnesota Street should be made into a green connector, as the Central Waterfront Area Plan also suggests.[279] This street comprises some of the area's most relevant historic features, including several Pelton Cottages, a few Victorian houses, and some of the oldest multifamily apartment buildings in the area. The implementation of the guidelines for street improvement of the 22nd Street Greening Master Plan and the addition of a central planted island on this street could considerably reduce vehicular traffic at the neighborhood level. Seating areas with signs for historic interpretation located in correspondence with the street's historic features can be useful to highlight the area's landmarks.

a.

b.

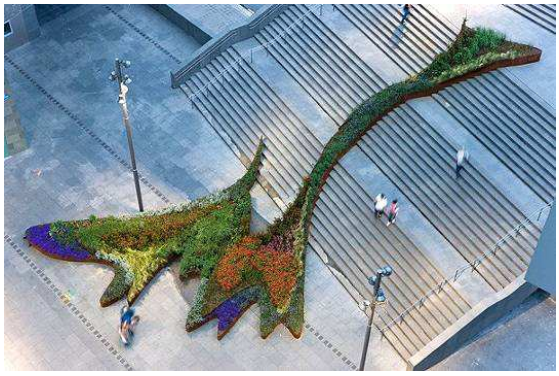
Figure 123a & b: Examples of Seating Areas

[279] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

C. Add a green feature to create a visual linkage between the Dogpatch neighborhood and Pier 70 (create a node and a landmark)

Figure 124 Pedestrian Ramp at 20th Street Made into a Visual Termini-View from Pier 70 Historic Core.

The 20th Street vehicular ramp could be transformed into a landscaped pedestrian ramp creating a focal point for the neighborhood of the Dogpatch and a connection with Pier 70. Taking the project of the Highline in NYC as an example, the ramp connecting the Dogpatch neighborhood to the residential areas of Potrero Hill should be made into a pedestrian zone to be used by residents from both neighborhoods. This transformation can create a connection through making the ramp into a visual termini allowing this "area in between neighborhoods" to be visible from the "historic core" of Pier 70. It could enrich the area's cultural and artistic heritage with elements of environmental art, also preventing through traffic from Pier 70 from entering the residential areas. The planting arrangement "garden on stairs" was used to demonstrate the type of environmental art that can be used to make the ramp into a focal point; an original and "site appropriate installation" should, however, be developed for this site.



125.

126.

Figure 125: Garden on Stairs-Bilbao
Garden on Stairs in Design Sigh, http://www.designsigh.com/2011/03/garden-on-stairs/ (accessed April 5th, 2013).

Figure 126: The Highline-NYC
The Highline- NYC in Erin Ryder, "Take the Trip: The Highline," Loftlife, http://loftlifemag.com/mu/?p=2288 (accessed April 5th,2013).

D. Extend Esprit Park onto the unused area of right-of-way under the 20th Street overpass (create a node and a landmark)

Figure 127: Plaza by the 20th Street Ramp

The unused area of the street and right of way around and under the 20th Street ramp should be reclaimed, using the principles of the Pavement to Parks program, allowing the planning of a series of pedestrian areas to be used by local residents and visitors.

The use of modular seating in natural stone can be used to both provide permanence and to allow the flexibility of rearranging the place for future uses. A planting area can make the plaza edgeless and favor flow and social mixing. The pavement should allow water infiltration through a pervious pavement (e.g. disconnected cobblestone) and should be grounded by (green) vertical elements (trees) to provide focal points. The edges of the plaza's envelope should be well-defined by elements of public or environmental art (mural and vegetated walls).

128

129

Figure 128: Vegetated Wall on Freeway: Pont Juvenal-Aix, Provence by Patric Blanc
Living Walls and Vertical Gardens, "Pont max Juvenal, Vertical Garden on a Bridge," in Living Wall Art
http://www.livingwallart.com/vertical-garden-installations/pont-max-juvenal-aix-en-provence/ (accessed April 5, 2013).

Figure 129: Example of Seating Arrangements

In Stf's, "Urban Seating: New State Street Seating,"
http://stephanielcooper.tumblr.com/ (accessed April 5, 2013).

Note: The living wall in the picture designed by the botanist Patric Blanc for a bridge in France is an example of vertical garden type of eco-art. Blanc typically uses local native plant species; his work is found in Europe, North and South America, Africa, Middle East and Asia.

The seating arrangements used in the example are from a street design project on State Street (Madison, Wiscounsin). The modular furniture is made out of granite, providing permanence and stability while also allowing the flexibility to rearrange the space if needed.

E. Make Indiana Street into a Green Connector Street (create a path)

Indiana Street contains commercial and industrial buildings and warehouses, vacant lots, parking areas, and very large sidewalks. The street is also one of the City's official bicycle routes (North 7) and has direct access to trails connected to the Caltrains Station underpass. The street offers the occasion to implement the principles of the "Pavement to Parks Program" in its large unused sidewalks and areas of right of way, as several portions of the wide sidewalk in Indiana Street could be used to create public areas with seating arrangements and bicycle parking (racks). The sketch in figure 130 is an example for a conceptual layout of a public area at Indiana Street.

Figure 130: Conceptual Layout for Public Areas at Indiana Street

The seating arrangements should use modular furniture that replicate in style those used in other areas of the neighborhood. Vegetation in the form of edges and tree groves can be used to create enclosures and separations between areas.

Planting areas around sidewalks and bulging out into the street ("bulbs"), also containing pieces of public/environmental art, can be used for traffic calming. The area, frequented by many cyclists, currently offers no bicycle parking; custom racks in the style of those in figure 131 and 132 can be a useful addition and enhance its industrial character.

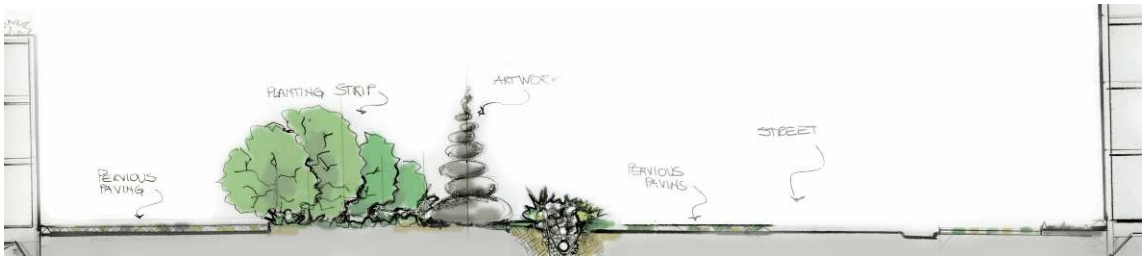


Figure 131: Section of Indiana Street at "Bulb Out"

132

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Figure 130: Example of Bicycle Racks
Bicycle Rack in Berlin, in Now That's Nifty, "26 Unique Bike Racks," http:/ www.nowthatsnifty.com/2011/11/26 (accessed April 5, 2013

Figure 131: Example of Bicycle Racks
Boston Bike Polo, "Design a Bike Rack for Mission Hill," http://www.bostonbikepolo.us/2008/03/design-a-bike-rack-for-mission-hill/ (Accessed May 1, 2013).

F. Connect Pier 70 to the inner city system of green streets (create a path)

Figure 132: Proposed Improvements to Fallen Bridge Overpass.

20th Street should be included in the plan for green streets proposed by the "Better Streets Program." This street could also be used to connect the historic core of Pier 70 to the City's green streets network in the Mission, through the "Fallen Bridges" overpass.

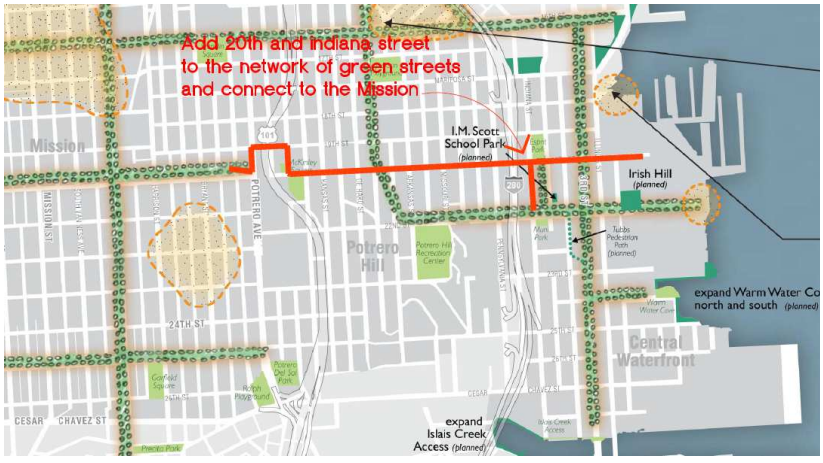

Figure 133: Proposed Connection to City's Green Streets System
City's Green Streets System in San Francisco Planning Department, Eastern Neighborhoods Streets and Open Space Concept Map, San Francisco: San Francisco Planning Department, December 2008.

Seating areas can be installed at increments in elevation along 20th Street to facilitate pedestrian travel. And environmental and public art and LED light fixtures can be installed to improve visibility and security along 20th street and by the pedestrian bridge at the Fallen Bridges Overpass (see figure 134).

G. Restore the natural environment: plan an urban forest (and vegetated swale) for the area surrounding I-280

Figure 134: Panorama of Urban Forest Mont Royal Montreal, Canada.
Panorama of Urban Forest in Arun Shanbagh, http://arunshanbhag.com/tag/panorama/ (visited April 7, 2013).

New landscaping, together with a landscape maintenance program, should be planned for the area around freeway I-280 and for the 22nd Street underpass. The landscaping plan should include a vegetated swale to solve the current drainage issues at Caltrain station, an urban forest, and a path connecting 22nd and 20th streets. The proposition by the City of San Francisco and Caltrain to include two right-of-way lots from the area in the underpass into the system of green streets offers the opportunity to implement this idea.[280]

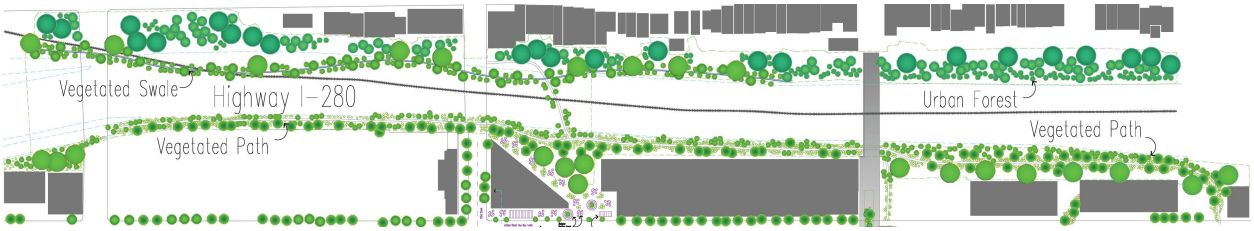

Figure 135: Diagram for Proposed Urban Forest and Vegetated Swale at Caltrain Station

[280] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

An urban forest will benefit the residential areas of the Central Waterfront in terms of improvement of the air quality of the abilities of certain plants to reduce CO_2 level and to take part in the process of carbon sequestration. The forests, to have effective pollution reduction properties, should include a heterogenic composition of plant types and forest layers, and the planting should be organized to maximize a balance of carbon sequestration (greater in growing plants) and carbon storage (higher in more mature trees).[281] It should take into consideration potential disservices such as the production of allergens, release of volatile organic compounds, leaf litter, obstructed views, and the maintenance costs associated with urban forests. In-depth studies to select appropriate plant species, together with studies of local environmental conditions affecting emission reduction, should be undertaken before considering this option.

H. Establish eco-parks at Mini Park and Warm Water Cove

Figure 136: Endangered Species at Mini Park

The evidence of native wildlife in Mini Park (the lower portion of the Potrero Hill Playground) and the many migrant birds at Warm Water Cove suggest that biodiversity could be reintroduced in selected areas of the Central Waterfront through the establishment of a program monitoring the habitat of native endangered species.

[281] William J. Manning, "Plants in Urban Ecosystems: Essential Role of Urban Forest in Urban Metabolism and Succession Toward Sustainability," *International Journal of Sustainable Development of World Ecology* 15, no. 4 (2008): 369; Min Zhao, Kong Zheng-hong, Francisco J. Escobedo, and Gao Jun, "Impacts of Urban Forests on Offsetting Carbon Emissions from Industrial Energy Use in Hangzhou, China," *Journal of Environmental Management* 91, no. 4 (2010): 810-812.

I. Design a greenway for Pier 70 (create a path)

A greenway for Pier 70 to connect Agua Vista Park to Warm Water Cove was envisioned in the planning process for the Central Waterfront. The greenway, consisting of a vegetated passage connected to a sequence of public areas, should encroach areas designated to open space by the Pier 70 Master Plan and should accommodate the objectives and follow the design guidelines of the Blue Greenway Project.

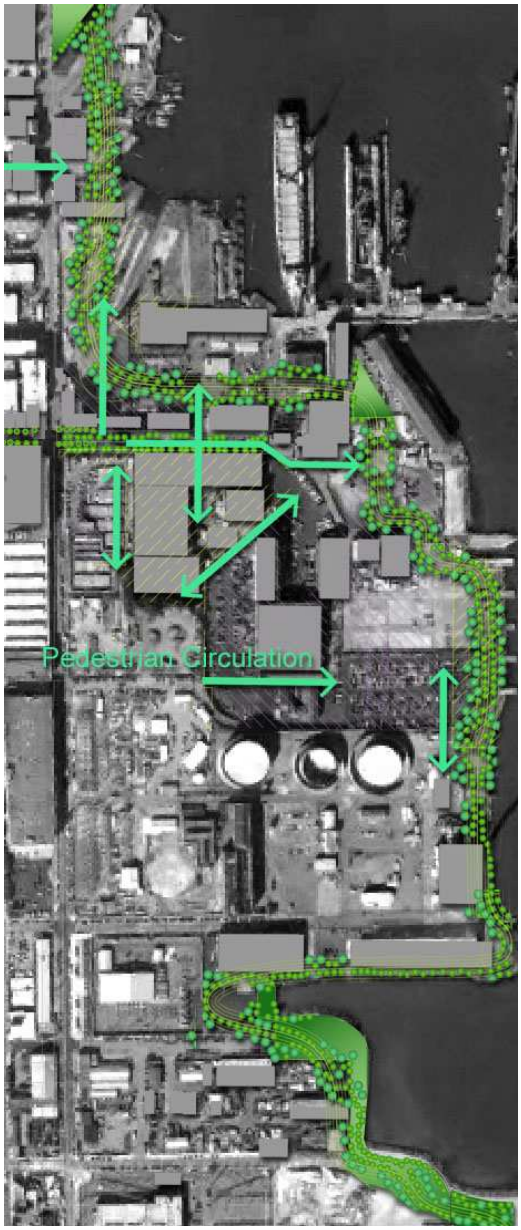

Figure 137: Conceptual Layout for a Greenway at Pier 70

Figure 138: Greenway in Santa Cruz, CA

Note: The design of the Greenway is subjected to the limitations imposed by the development planned for Pier 70, by the location of development zones, and by the framework of future streets and pedestrian areas.

The location of the vegetated areas should also be planned to overlay areas of infill development; and the introduction of any elements (sculptures, furniture, etc.) should be consistent with the

Secretary of the Interior Standards requiring the juxtaposition of old and new elements (to avoid false historicism).[282] By these standards the dialectic of the surrounding historic features should also be maintained in terms of material, size, scale, proportions, and massing.[283]

Figure 140: Section of Greenway Encroaching Areas of Infill Development

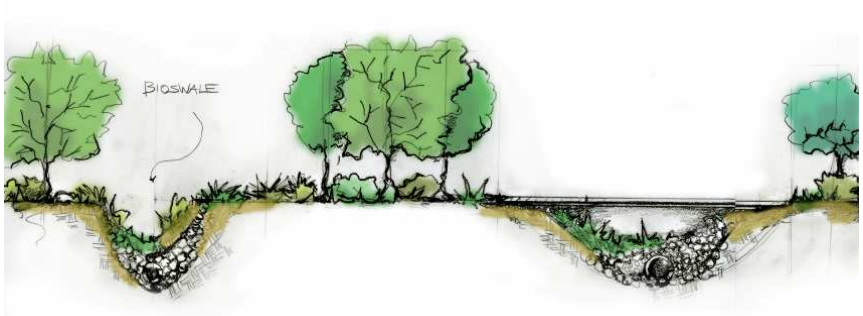

Figure 140 Section of Greenway in Areas of Open Space

Note: The area's nomination as an historic district will constrain the design of landscape features, the type of allowed hardscape treatment, and the distribution of planting areas. And the establishment of plants in the area designated to open space will also be subjected to the quality of the subsoil and to the contamination in the ground. The location of the planted areas should be, therefore, carefully planned to take advantage of the occasional pockets of loamy soil, and should be combined with bioremediation and bioswales to create linear elements for the alignment of the walking and bike trails.

The conceptual design of the greenway should be fully developed only after following the programming of other elements for the areas it encroaches. Proposals for art installations to remediate the most contaminated areas should be solicited from qualified artists, biologists, and environmental engineers.

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[282] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 39.

[283] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 61.

J. Make Warm Water Cove Park into a significant cultural "node" (create a node and a landmark)

The modernization of Warm Water Cove Park offers the occasion to create an "art" park allowing areas for activities for local young people. The metal fence could be used as a canvas for street art, and the park could include an area dedicated to the staging of live performances (music etc.). This type of use for the park would fulfill the objective of the Blue Greenway Program to create public areas for a variety of appropriate uses including potential entertainment facilities for special events.[284] The plan for Warm Water Cove produced in 2007 on occasion of the (SPUR's) Piero N. Patri Fellowship previously outlined that local young people envisioned the park as an art-oriented open space, for live music and alternative performances, such as "popcorn theatre revival," and for cultural events such as arts and craft fairs, food, and film festivals.[285] Art murals, community gardens and other nature-oriented recreation activities were also supported by the residents.[286] The park should be redesigned in a way that resolves current issues of security. Its envelope should be balanced with vegetation, and large elements (in the form of sculpture and plants) should be placed in strategic areas to break areas of empty space. These elements (sculpture, plants and seating areas) should be distributed appropriately and placed in strategic locations to increase the sense of security and to encourage visitor's flow. The vegetation should be restored to a native meadow (and the asphalt paviment removed) to promote adequate habitats for the wildlife currently frequenting the park. Graffiti

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[284]San Francisco Planning Department, *Central Waterfront Cultural Resources Survey Summary Report and Draft Context Statement October 2000-September 2001* (San Francisco: San Francisco Planning Department, 2001), 4.6.

[285] Mike Ernst, *Envisioning Warm Water Cove: Pietro N. Patri Fellowship in Urban Design at SPUR Summer Report* (San Francisco: Spur, 2007), 21.

[286] Mike Ernst, *Envisioning Warm Water Cove: Pietro N. Patri Fellowship in Urban Design at SPUR Summer Report* (San Francisco: Spur, 2007), 22.

should be reintroduced, as they have taken an important role in Warm Water Cove's history, and are still supported by many residents that believe they gave a "unique industrial DIY character to the Dogpatch."[287]

Figure 141: Conceptual Idea for Warm Water Cove Park

* * *

[287] Mary Purpura, "Open Space, The Final Frontier," *The Potrero View*, January 2010, http://www.potreroview.net/news10294.html (accessed January 12, 2013).

This study was motivated by the idea of using green areas for space integration in urban centers, proposing its potential applicability to resolve issues of fragmentation, common with projects of waterfront revitalization. It was also conducted to demonstrate that art installations through community design can be an interesting approach to waterfront reclamation, combining ideas of abstraction (space integration) to place making.

The existing conditions of the site were assessed to determine what factors could be significantly impacted by the new development. An attempt was also made to test the applicability of operable theoretical models for site analysis, and to combine them with existing planning initiatives to develop a program suitable for this specific urban environment.

It was learned from the study that the effects of the potential increase of commercial and recreational activities in the area could have negative effects, but that the introduction of new vegetated public areas could be, on the other hand, beneficial and mitigate the negative effects of redevelopment (increased vehicular traffic). And that an integrative design of green streets and green public areas, especially if incorporating elements of public/environmental art, could help perpetuate the idea of street livability by promoting the development of social capital, improving environmental conditions, and overall contributing to the area's cultural heritage.

There are a number of factors that this study has expressly avoided. One is the economic implications of such an idea, both in terms of its cost, benefits and feasibility of implementation. And the other is a quantification of the actual economic and social benefits local communities would derive from their involvement in this type of community project of public art. Even upon the scope of this study there are a number of facets which have been touched upon very briefly, such as the distribution of existing land uses, intensity of use of certain street fragments, existing patterns of pedestrian circulation, and the overall systematic application of the result to the development of an operable design program.

It would be useful to extend the study to include figures of projected growth and expected post development traffic increase. The potential effect these could have on local residential communities could help assess the extent in which a diversion of traffic flow could be useful, taking guidance from studies conducted on street livability. In all these aspects this study is only a foray into the subject and its gains should be consolidated and extended by more systematic studies and operations focusing on specific aspects of the programs to be developed.

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Appendix A: Useful Policies

The Central Waterfront Area Plan

Objective 4.5: **"**Consider the street network in Central Waterfront as a city resource essential to multi-modal movement and public open space**."** [1] The objective is to ensure the continuation of sight lines and pedestrian passages even in areas where the street grid cannot be extended. Large parcels should be broken into human scale blocks and access to all areas of the neighborhood facilitated. Some of the unused right of way should be recovered by identifying areas that can contribute to pedestrian and traffic safety and public open space, and allow the removal of "dearth" on public space from selected areas.[2]

> POLICY 4.5.3
> Redesign underutilized streets not needed for PDR business circulation needs in the Central Waterfront for creation of Living Streets and other usable public space.
>
> POLICY 4.5.5
> Reclaim public rights-of-way that have been vacated or incorporated into private parcels.[3]

Objective 4.6: **"**Support walking as a key transportation mode by improving pedestrian circulation within the Central Waterfront and to other parts of the city." [4] This objective consists of encouraging the extension of the street grid and in the creation of human-scaled city blocks to establish pedestrian comfort, including the creation of pedestrian links and connections between the Central Waterfront and surrounding neighborhoods.[5] It also includes the implementation of

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[1] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[2] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[3] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[4] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[5] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

the Bay Trail Project planned by ABAG (Association of Bay Area Governments) consisting of a 400-mile network of bicycle and hiking trails.[6]

> POLICY 4.6.2
> Prioritize pedestrian safety improvements at intersections and in areas with historically high frequencies of pedestrian injury collisions.
>
> POLICY 4.6.4
> Facilitate improved pedestrian crossings at several locations to better connect the Central Waterfront and surrounding areas–Potrero Hill, Mission Bay, and Showplace Square.
>
> POLICY 4.6.6
> Explore opportunities to identify and expand waterfront recreational trails and opportunities including the Bay Trail.[7]

Objective 5: **"**Streets & open space."[8] This objective aims at providing open space for the waterfront and encourages private open space to be provided as part of new development, and the use of "right of way" for pocket parks.[9]

Objective 5.1: **"**Provide public parks and open spaces that meet the needs of residents, workers and visitors."[10] Potential locations for parks identified within the development of Pier 70 include Warm Water Cover and Crane Cove Park, the Potrero Power Plant site, and the area surrounding Irish Hill. Other potential sites for parks and open spaces include the San Francisco Unified School District on the IM Scott School Expansions to the south of the Bay and the remnant of Irish Hill.[11]

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[6] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[7] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[8] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[9] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[10] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[11] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

POLICY 5.1.1
Identify opportunities to create new public open spaces and provide at least one new public open space serving the Central Waterfront.[12]

Objective 5.3: "Create a network of green streets that connects open spaces and improves the walkability, aesthetics, and ecological sustainability of the neighborhood."[13] An open space network consisting of green connectors is proposed by the area plan to create linkages between open spaces and parks. This includes a greenway for 24th Street connecting Warm Water Cove to the neighborhood, and the creation of green connectors to include Minnesota, 22nd and 3rd streets. It also contemplates the creation of pedestrian loops to improve the connections between the existing Caltrain station and the future 23rd Street light rail stop. Landscape improvements and other design interventions should also be considered at major intersections, and should include solutions such as bulb-outs and landscaping treatments.[14]

POLICY 5.3.1
Redesign underutilized portions of streets as public open spaces, including widened sidewalks or medians, curb bulb-outs, "living streets" or green connector streets.

POLICY 5.3.2
Maximize sidewalk landscaping, street trees and pedestrian scale street furnishing to the greatest extent feasible.

POLICY 5.3.3
Design the intersections of major streets to reflect their prominence as public spaces.

POLICY 5.3.4
Enhance the pedestrian environment by requiring new development to plant street trees along abutting sidewalks. When this is not feasible, plant trees on development sites or elsewhere in the plan area.

POLICY 5.3.5
Significant above grade infrastructure, such as freeways, should be retrofitted with architectural lighting to foster pedestrian connections beneath.

POLICY 5.3.6
Where possible, transform unused freeway and rail rights-of-way into landscaped features that provide a pleasant and comforting route for pedestrians.

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[12] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[13] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[14] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

POLICY 5.3.7
Develop a continuous loop of public open space along Islais Creek.

POLICY 5.3.8
Pursue acquisition or conversion of the Tubbs Cordage Factory alignment to public access. Should it be infeasible to purchase the necessary property, future development should include the following improvements:

• Good night-time lighting for pedestrian safety and comfort.
• Limit ground cover to 24" to maximize visibility.
• If benches are provided, they should be placed only at the street.

POLICY 5.3.9
Explore opportunities to identify and expand waterfront recreational trails and opportunities including the Bay Trail and Blue-Greenway.[15]

Objective 5.4: **"**The open space system should both beautify the neighborhood and strengthen the environment." This objective encourages ecological sustainability through the creation of new public spaces by reclaiming the excess street right-of-way throughout the Central Waterfront, and turning impermeable surfaces into pocket parks. New public parks should incorporate ecological sustainability elements such as bio-swales and natural areas.[16]

POLICY 5.4.1
Increase the environmental sustainability of Central Waterfronts system of public and private open spaces by improving the ecological functioning of all open space.

POLICY 5.4.2
Explore ways to retrofit existing parking and paved areas to minimize negative impacts on microclimate and allow for storm water infiltration.

POLICY 5.4.3
Encourage public art in existing and proposed open spaces.[17]

[15] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[16] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

[17] City of San Francisco, *San Francisco General Plan: Central Waterfront Area Plan* (San Francisco: San Francisco Planning Department, 2008), 61-71.

Open Space and Public Access Planned for Pier 70

The Pier 70 Preferred Master Plan proposes a network of parks, programs, paths, roads, and public places that tie in with plans for a regional and open space system furthered by the City's Blue Greenway open space effort.[18]

Proposed Network of Pedestrian Promenades

The several public areas comprised in the area of Pier 70 shall be connected with a network of ways, promenades, and walkways providing pedestrian and bicycle circulation and connecting Crane Cove Park to the Mirant Potrero Power Plant.[19]

Streetscape and Hard Surfaces Treatment

The historic character of the site, as well as issues of ground contamination will determine the type of ground treatment for the streets and public areas, and the location and distribution of planting areas. Design suggestions and environmental consideration proposed by the Pier 70 Master plan are summarized below:

Design suggestions:

1. Retention of existing features and reflect and complement the industrial character of the site
2. Exposure of rail lines, infrastructure corridors and historic features, objects and materials
3. Use of unit pavers such as cobblestone
4. Reuse salvaged material
5. Integrate historical industrial objects as interpretative elements displayed in plazas[20]

Environmental considerations:

1. Limit planted vegetation for the design's criteria applicable to historic industrial areas
2. Limit planted vegetation because of the contaminated fill of the subsurface
3. Avoid the excessive use of glass to reduce risks for birds
4. Use of freestanding planters to highlight the additive nature of planting
5. Use green roof technologies and roof designs to capture and manage storm water and compensate for the absence of planted areas
6. Implement environmental remediation and storm water control to remediate or manage contaminants at the site
7. Restoration measures range from capping in place to off-site disposal[21]

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[18] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 51.

[19] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 55.

[20] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 63.

Street Greening, Public Places and Pedestrian Routes: Pavement to Parks San Francisco

"Pavement to Park" is a collaborative effort between the San Francisco Planning Department, the Department of Public Works, the Municipal Transportation Agency and the Mayor's Office.[22] This initiative has the objective of reclaiming unused stretches of streets to produce public plazas and parks. It was inspired by a similar effort that turned large portions of New York City streets into pedestrian and seating areas.[23] In San Francisco, the public places designed through this program will test the potential of the selected locations to be permanently reclaimed as public open space. The selection of the potential locations is based on the following criteria:

1. A sizeable area of underutilized road way
2. The lack of public space in the surrounding neighborhood
3. Pre-existing community support for public space at the location
4. The potential to improve pedestrian and bicyclist safety via redesign
5. Surrounding uses that can attract people to the space
6. Identified community or business steward[24]

A Plan for Greening the Neighborhood Streets: Plan for Street Greening: 22nd Street/Dogpatch

This document is a Master Plan for the greening of the stretch of 22nd Street between 3rd and Pennsylvania Street, a program managed by GreenTrust. The plan is supposed to make 22nd Street into a green street, and to connect it to the green street network proposed by the Eastern Neighborhood Plan. It includes programs for enhancing public space for commercial, residential, and institutional users, inducing traffic calming, improving public safety, and enhancing pedestrian, bicycle, and mass transit.

The Master Plan includes plans for the renovation of the 22nd Street Muni Mini-Park, improvements to the area around the 22nd Street rail stop, and the increase of street planting along

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[21] San Francisco Port Authority, *Pier 70: Preferred Master Plan* (San Francisco: Port of San Francisco, 2010), 64-83.

[22] San Francisco Planning Department, "Pavements to Parks: San Francisco," San Francisco Planning Department, http://sfpavementtoparks.sfplanning.org/about.html (accessed December 3, 2012).

[23] San Francisco Planning Department, "Pavements to Parks: San Francisco," San Francisco Planning Department, http://sfpavementtoparks.sfplanning.org/about.html (accessed December 3, 2012).

[24] San Francisco Planning Department, "Pavements to Parks: San Francisco," San Francisco Planning Department, http://sfpavementtoparks.sfplanning.org/about.html (accessed December 3, 2012).

22nd Street. It also includes a kit of best practices to be utilized for the overall improvement of streets in the area, including the use of native vegetation and design standards for different types of landscaped areas. The goals of the Plan are to improve water quality, biodiversity, decrease water volume, recharge ground water, and improve air quality.[25] The plan established the following tools to be employed for the greening of 22nd Street and other established areas of the neighborhood:[26]

1. Establish areas of flexible parking where car parking spaces can be converted to other uses such as café seating and greenery[27]

2. Adopt the principles proposed by the City's program "Pavement to Park" by converting intersections and areas of the public right of way to parks and plazas. The extra space is typically enclosed for public use with the help of large scale planters to ameliorate the imbalance between streets and parks and open space[28]

3. Implement events such as "Sunday Streets" to strengthen the local sense of community currently occurring in summer. During this day streets are temporarily closed to vehicular traffic and re-designated for walking, cycling, skating and playing[29]

4. Adopt street greening tools such as sidewalk planting and bulbouts; increase sidewalk lighting and underpass lighting; implement water treatment; install bike racks, crosswalks, bicycle lanes, sidewalk benches, traffic circles, medians and chicanes; and encourage street painting.[30]

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[25] Mary Purpura, "Open Space, The Final Frontier," *The Potrero View*, January 2010, http://www.potreroview.net/news10294.html (accessed January 12, 2013).

[26] Fletcher Studio and Nelson Nyagaard Consulting, *Dogpatch/22nd Street Greening* (San Francisco: Greentrust S.F, 2011).

[27] Fletcher Studio and Nelson Nyagaard Consulting, *Dogpatch/22nd Street Greening* (San Francisco: Greentrust S.F, 2011).

[28] Fletcher Studio and Nelson Nyagaard Consulting, *Dogpatch/22nd Street Greening* (San Francisco: Greentrust S.F, 2011).

[29] Fletcher Studio and Nelson Nyagaard Consulting, *Dogpatch/22nd Street Greening* (San Francisco: Greentrust S.F, 2011).

[30] Fletcher Studio and Nelson Nyagaard Consulting, *Dogpatch/22nd Street Greening* (San Francisco: Greentrust S.F, 2011).